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ABSTRACT

Four papers are included in this document concerning the structure of linguistic input to children. Dan Slobin's paper, "Questions of Language Development in Cross-Cultural Perspective," suggests that children everywhere acquire basic grammatical competence in the first five or six years of life, regardless of social milieu or linguistic structure. Each child is equipped with a basic strictly linguistic competence which can be differentially shaped to carry out a variety of sociolinguistic functions. "Some Suggestions for a Syntactic Characterization of Baby-Talk Style," by Carol Pfuderer examines whether or not some overall, empirically-observable type of syntactic simplicity can be said to exist in the baby-talk style of English. "The Language of the Parent: A Pilot Study," by Kerry Drach, raises the question as to whether or not parental linguistic input to the child really represents a random sampling of adult speech in general, and Ben Kobashigawa's paper "Repetitions in a Mother's Speech to her Child," deals descriptively with some of the linguistic properties of a mother's use of repetition to her 26-month old son and some incidental phenomena associated with her use of repetition. (CLK)

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THE STRUCTURE OF LINGUISTIC INPUT TO CHILDREN

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QUESTIONS OF LANGUAGE DEVELOPMENT IN CROSS-CULTURAL PERSPECTIVE

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Psycholinguists are interested in the underlying knowledge and abilities which people must have in order to use language and in order to learn to use language in childhood. I say "underlying knowledge and abilities" because language, like all systems of human knowledge, can only be inferred from the careful study of overt behavior--in this case, speech and comprehension of speech. Thus, the problem of the psycholinguist is that of all social scientists who venture beyond description of behavior; namely, postulating underlying structures which may account for apparent orderliness in observed behavior. To use the terms of modern linguistics, we are interested in the competence which enables people to engage in the complex performance of linguistic interaction. Phrasing the problem in these terms, however, places "competence" in a considerably broader context than that of the linguist, for, in interacting with one another, people must know not only the rules of their language but the rules of social interaction as well. And in raising questions of performance and of acquisition we open a Pandora's box of psychological issues involved in such classical areas as learning, attention, memory, perception, cognitive development, and the like.

I raise these rather mundane points at the outset to make it clear that strictly linguistic competence is only one component of what I take to be the underlying knowledge and abilities which we all have as language users. In this presentation I attempt to raise a few broadly speculative questions which cut across the various behavioral sciences concerned with language. My basic quest is the structure and genesis of the human mind, as shaped by biological and social factors. It is of value to begin with linguistics, for here we have one of the most precise and provocative descriptions of a segment of human knowledge.

In what sense can the seemingly dry subject of formal linguistics be said to deal with mind and knowledge? Consider, briefly, some of the many things you know about the syntax of English (and remember that these are things which each of you somehow came to know as a very young child). The examples are drawn from the work in transformational grammar of Noam Chomsky and his colleagues. You know, for one thing, that many sentences of the language can be ambiguous. To take a familiar example: Visiting relatives can be a nuisance. Here is a single string of words, a single grammatical structure, yet you know that in some sense which goes deeper than its surface structure it has two possible interpretations: Visiting relatives IS a nuisance and Visiting relatives ARE a nuisance. That is, you know that sentences have underlying meanings, and the cues to these meanings are not simply given in the surface characteristics of the sentences as they are heard.

Another obvious example of the capacity to interpret sentences is your ability to discover the logical propositions underlying utterances: in simple terms, who is doing what to whom? The active sentence LBJ backs Humphrey has the same meaning as its corresponding passive, Humphrey is backed by LBJ. In each case, you are able to discern who is subject and who is object of the verb, though the word order is changed. And lest you think that only position in a surface sentence frame guides you in this interpretation, consider the following two passive sentences:

They were blocked by police.

They were blocked by force.

Though police is the logical subject, or agent, of the first sentence, force does not play a similar syntactic role in the second; your knowledge of English structure makes it clear that the second sentence omits mention of the agent,

though you know he is a user of force. Consider another pair of apparently similar sentences, oft-quoted in the linguistic literature:

John is easy to please.

John is eager to please.

Somehow you know that John is object of the first sentence ("Somebody pleases John") and subject of the second ("John pleases somebody"). Again, the message is a simple one: You must go beneath the surface structures of sentences to discover their meanings. Transformational grammarians have attempted to provide detailed descriptions of the rules required to relate the surface structures of sentences to their underlying, or deep, structures.

Why is it necessary, however, to consider such rules in discussing the nature of human knowledge? It is because the use of language is productive: We are continually being called upon to create and understand new sentences. This fact often comes as a surprise. Somehow, it seems intuitively that the stock of sentences cannot be unlimited. A simple mental exercise drives this point home. Imagine opening a book: read a sentence, and see how far you have to read to find that sentence repeated again. Unless you have happened upon a cliché, or a theme which is quoted again and again, I think you would find the job hopeless. Sentences are, by and large, novel events. This raises the central psycholinguistic question: How can a new sentence be produced and understood? Since sentences cannot be learned by rote, the developmental psycholinguist must concern himself with the child's formation of rules whereby he can project a limited amount of experience with a limited number of sentences to the capacity to produce and understand an unlimited number of sentences. Again, phrased in this way, the problem is not unique to students of language

development, but faces all social scientists concerned with development and socialization.

The use of the word "rule" in this context is perhaps unfortunate. It leads people to think psycholinguists believe that people can state explicit rules of grammar, and that children learn such rules. This, of course, is not what I have in mind. None of us, for example, can state all of the rules of English grammar. (If we could, linguists would have nothing to do!) Perhaps this important notion of "rule" can be clarified by asking about the sorts of behavioral evidence which would enable one to speak of a person's possession of a rule. I believe this approach can be fruitfully applied to other realms of social behavior as well. Here I will speak in terms of the development of grammatical rules in childhood.

There are various levels of evidence for rules, from less stringent to more stringent. The simplest sort of evidence comes from analysis of the spontaneous speech of the child. One takes a corpus of speech and looks for distributional regularities of various forms. Already at the primitive level of two-word utterances one finds this sort of basic evidence for grammatical rules, for such utterances are not random or unstructured juxtapositions of two words. In the case of a number of children learning English (Braine, 1963; Miller and Ervin, 1964), as well as a number of other native languages (Slobin, in press), one typically finds two classes of words. There is a small class of what have been called "pivot words" by Braine or "operators" by Miller and Ervin, and a large, open class of words, many of which were previously one-word utterances. For example, a two-year-old child may say things like: bandage on, blanket on, fix on, take on, and many other sentences of this type. The word on is a sort of "pivot" here--it is always in second position, and a

large collection of words can be attached to it. The child may also say things like: allgone shoe, allgone vitamins, allgone outside, and allgone pacifier. In this case one can say that there is a pivot in first position--allgone--which is followed by a large class of words in the child's speech.

This, then, is the earliest sort of evidence for rules ontogenetically--regularities of behavior. Already at this stage of development, it is important to note that the child seems to be building idiosyncratic structures. Many of his utterances, although consistent with his system, do not directly correspond to adult utterances and do not look like reduced imitations of adult utterances. The pivot stage is rich with charming examples of such childish utterances (Braine, 1963): allgone sticky (after washing hands), allgone outside (said when door was shut, apparently meaning, "the outside is all gone"), more page (meaning, "don't stop reading"), more wet, more car (meaning, "drive around some more"), more high (meaning, "there's more up there"), there high (meaning, "it's up there"), other fix (meaning, "fix the other one"), this do (meaning, "do this"). It is quite unlikely that the child has ever heard utterances quite like these. Rather, it seems that, using the limited tools he has, the child is already trying to express himself in his own way, producing novel utterances within his system. He seems to have a grammatical system of his own, which is, of course, based on what he has heard but which is also not a direct reflection of sentences he could have imitated from adult speech. I will return later to this important question of the role of input in the child's language development.

Before leaving the two-word stage, however, and this low-order evidence for rules underlying the child's speech, let me note that the child is already using language in its most universal and basically human sense. Pivot constructions

function to express the most elemental speech acts: the child spends much of his time naming objects or describing actions. Subject-predicate constructions can be discerned from the start. Both quantitative and qualitative modifications appear early on. There are imperatives, questions, assertions--and there is always some form of negation. In short, the language is used to describe the world and manipulate people. It already performs unique functions of human communication, functions which are not--by and large--characteristic of communication systems of other primate species.

A more stringent test for the existence of rules is to look for the extension of regularities to new instances. We have such evidence in the spontaneous speech of the child when he says things like "it breaked" or "two mouses." Such examples of overgeneralization of grammatical principles are rampant in the speech of children of all languages studied developmentally. Jean Berko (1958) has created an explicit test of children's ability to extend morphological rules to new cases, and her method recommends itself to the developmental study of other rule systems. She presents children with new words and invites them to apply their linguistic knowledge to the use of these words. For example, a child is presented with a picture of a little creature called a "wug," and then is asked to name a picture showing two such creatures. If he says "two wugs"--/tuw wʌgz/--one has clear evidence that he knows how to produce this particular English plural ending, since he has clearly never heard the word "wug" before.

But there are even more stringent tests--or definitions--of a rule. On the next level one can ask if the child can detect deviations from regularity, if he can judge if a given construction is right or wrong. This <u>normative</u> sense of rules is a later development in ontogenesis, and corresponds to what linguists refer to as a "sense of grammaticality." Actually, there are several levels of evidence here.

The first comes, again, from spontaneous speech. If a child stops and corrects himself, this is evidence that he is comparing his speech with some standard of correctness. He is monitoring it in regard to his rules. Three-year-olds are frequently heard to stop and correct themselves while speaking. Consider, for example, the following bit of spontaneous talk of one of our three-year-old girls in the Oakland ghetto:*

> ..... Renee had a . . . silly putty like me had . . .
> like I . . . like I did . . .

Clearly, this child is applying a sense of grammaticality to her speech. But note that she can only be comparing what she says to her <u>own</u> rules, and not to adult rules; while her sense of rules is already normative, the norms are of her own form, for at another point she stops and corrects herself in the following fashion:

> Why . . . Why . . . Why ducks have not . . . Why ducks have no hands?

A more difficult test of this sense of grammaticality is to see if the child can detect ungrammaticalness in the speech of others. At some point, children usually begin to correct each other (and their parents!).

The most difficult test of grammatical judgment is the direct question. The child can be asked if it is, for example, "better" or "more correct" to say "two mouses" or "two mice." This is an extremely important type of data for the linguist working with adult informants. It is, however, an ability late to develop in childhood, and, unfortunately, of little use in dealing with very young children. The frustrations resulting from such attempts are aptly captured by the "pop go weasel effect" described by Roger Brown and

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*All Oakland data cited in this paper were gathered by Claudia Mitchell, Department of Anthropology, University of California, Berkeley, and are to be cited with her consent.

Ursula Bellugi-Klima (Brown and Bellugi, 1964):

> Interviewer: Now Adam, listen to what I say. Tell me which is better . . . some water or a water.
>
> Adam (two years old): Pop go weasel.

So far, then, we have the following evidence for rules. We can be fairly sure that a child has some rule system if his production is regular, if he extends these regularities to new instances, and if he can detect deviations from regularity in his own speech and the speech of others. This is generally what psycholinguists mean when they speak of the child's learning, or forming, or possession of linguistic rules. Note that I have left out the most stringent test for the existence of rules, namely: Can the individual state the explicit rule? As I pointed out before, using this as evidence, of course, we would all fail the test. Since no complete and adequate grammar of English has been written, in fact, none of us knows the rules of English according to this criterion. We can follow them and use them implicitly, but we can state them only rarely, imperfectly, and with uncertainty. Explicit statement of rules is irrelevant to our concerns here and is probably an entirely different sort of behavior. As Susan Ervin-Tripp has put it (Slobin, 1967, p. x):

> To qualify as a native speaker . . . one must learn . . . rules . . . This is to say, of course, that one must learn to behave as though one knew the rules [my italics].

In very rough and brief form, the sorts of behavior I have just listed constitute evidence for behaving "as though one knew the rules."

Developmental psycholinguists in the United States have collected much evidence of this sort, clearly indicating that at least middle class English-speaking children develop, discard, and refine grammatical rule systems, ultimately arriving at adult linguistic competence (see, for example, Bellugi and

Brown, 1964; Smith and Miller, 1966). Furthermore, individual children go through strikingly similar stages of development (Brown, Cazden, and Bellugi, in press; Cazden, 1968, Klima and Bellugi, 1966). What little information we have on children acquiring other native languages suggests a universality of stages and processes of acquisition (Braine, in press; Slobin, 1966, in press). The thrust of theory and research in this field has been to emphasize universality and the existence of innate, biological determinants of such universality (Lenneberg, 1967). Theory, however, far outstrips data in this realm, and a group of us at Berkeley have embarked on cross-cultural research to fill in some of the gaps in our knowledge of how children growing up in different social milieux acquire different native languages. The world provides us with a vast array of "natural experiments" in which linguistic structure and social structure are varied far beyond our ability to simulate them in any artificial situation.

Susan Ervin-Tripp, John Gumperz, and I, together with graduate students in anthropology, linguistics, and psychology, have put together "A Field Manual for Cross-Cultural Study of the Acquisition of Communicative Competence (Slobin, 1967). Some of our students have taken this field manual to research sites around the world,* and we have just spent this past summer in a preliminary look at their findings. We are far from any definitive results at this point, but we have already learned a good deal about the hazards and hardships of

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* Jan Brukman worked with the Koya, a Dravidian language tribe of India; Ben Blount dwelt among the Luo of Kenya; Keith Kernan and Claudia Mitchell worked together in the Negro ghetto of Oakland, California, and then in American Samoa; Brian Stross studied Tzeltal-speaking Mayan Indians in Chiapas, Mexico; and Carolyn Wardrip stayed at home to study lower middle class white children in Albany, California.

controlled research in strange lands. In this presentation I shall deal with but one broad question raised by these investigations: From whom do children learn to speak?

The careful work which has been done in the United States on child language has assumed, quite appropriately, that the mother is the major source of input to the child in his acquisition of his mother tongue. Even if the child comes equipped--"pre-programmed" as it were--with an elaborate "language acquisition device," that device still requires the speech input of a specific language in order to arrive at the rules underlying that language. Linguists have paid relatively little attention to the nature of the input, but the psycholinguists working with Roger Brown at Harvard have made significant discoveries through the study of mother-child interaction (Brown, Cazden, and Bellugi, in press). On the basis of Brown's striking success, we instructed our fieldworkers to systematically record samples of mother-child interaction, hoping thereby to obtain ample material for grammatical analysis of language development and speech input in a variety of languages. Most of our fieldworkers, however, returned to tell us that, in most cases, mothers do not spend much of their time speaking to children and that the major input to the language acquisition device seems to be the speech of older children. It seems that the isolated American middle class home, in which a single mother spends long stretches of time alone with her children, may be a relatively rare social situation in the world. This finding requires us to begin to examine our notions of the necessary conditions for language acquisition.

Among our foreign samples, only the Mayans sound somewhat similar to our American situation. Brian Stross reports (personal communication):

> In the Tenejapa parajes each household is generally isolated from other households in the vicinity by both distance and by an often lush garden of wild plants such as fruit trees, grasses, etc. . . . From birth to about two years old the child is almost constantly with the mother, wrapped in swaddling cloth till about a year old, and much of the time in the sash on the mother's back which can be swung around to the front for feeding. After 1 1/2 to 2 years the child is allowed to crawl within close reach of the mother, inside the house usually, but up to 3 and even 4 years old the mother or some other female close relative will carry the child visiting, to market, or anywhere else that is more than about 50 yeards away. In any case up to the age of 4 or 5 children of both sexes receive most of their speech input from their mothers.

The other field sites are strikingly different. Jan Brukman says of the Koya (personal communication):

> The major sources of input to Koya kids are overwhelmingly other children. Since mother and father are always working, older siblings are charged with the care of younger sibs . . . and it is elder sisters that are mostly responsible for children. . . . An elder sib can be as young as 3 1/2 or 4 when she begins this job. She takes the kid wherever she goes on her hip. . . . The mother has effective control of the child whenever she isn't busy, which is early in the morning, and from the late afternoon onward. However, just as there are usually always sibs around, so are there surrogate mothers, and mothers' sisters, husbands' sisters and wives, often are functionally mothers. It would falsely simplify the problem to talk about mother-child relationships as a one-of-a-kind enduring relationship where a group of people, especially co-resident women and the lineage to which they are attached, have certain "rights" in the child. This is a problem in all extended-household types of societies.

Keith Kernan reports a similar situation in Samoa, again a society with extended family households. He summarizes (personal communication):

> So the effect of the social structure upon the linguistic input to the child is that no one adult female serves as the linguistic model for very young children as is often the case in American nuclear households. In addition other children serve as important sources of

> linguistic input for the child from the time of its birth and after the child has reached age 2 1/2 years other children are more important as sources for linguistic input than are adults.

Ben Blount's comments about the Luo of Kenya repeat the theme (personal communication):

> After the age of 1, an older sibling, preferably a girl between the ages of 4-11, will be assigned as a nursemaid for the child, and she gradually will take over responsibility for the child's welfare. The child's mother will begin to return to her regular work in the gardens, which she must do for several hours every day, and by the time a child is 2 1/2, the major source of speech input has shifted from his mother to his nursemaid. . . . The nursemaid continues to be the major source of speech input until the child is 3-3 1/2 at which time the peer group becomes the most important source. Peer groups of this type are made up of children in the age range of 3-7. . . . From my observations, the speech input from adults seems to be quite insignificant during this period. . . .

Finally, we have the same social situation close at hand, in the Negro ghetto of Oakland. According to Claudia Mitchell (personal communication):

> In general, with increasing size of family children spend greater portions of their time in play groups with other children who may be either siblings or the children of neighbors. . . . Most of the conversation that I witnessed between mothers and children took the form of requests by children to mothers for basic needs to be taken care of, or for disputes to be settled. Most of the speech of mothers to children . . . took the form of imperatives or such questions as Where are your shoes, Are you hungry, etc. . . . The artificiality of mother to child conversation beyond what has been mentioned is underscored by many mother's limitations in eliciting speech from their children at the request of the investigator. Mothers were hard put to engage a child in conversation beyond naming games for younger children and requests for reporting about particular events, such as what went on in nursery school for older children. In other words they suffered from many of the same limitations as the investigator who was unfamiliar with the children and their attempts to engage their children in conversation were for the most part abortive.

Though we have not yet analyzed the language development of the children studied in these diverse groups, it is the impression of the fieldworkers that they all appear to acquire language at a normal rate and are clearly not "linguistically deprived." This is certainly true of the Oakland children, whom we have begun to study in some detail. Yet they are clearly not exposed to what we take to be the standard language learning situation of our educated middle class families. Perhaps, then, the role of speech input is merely to provide a "data base" from which the child can form his own notions of the structure of his language. I should like to expand this argument by examining what we do know about the role of mother's speech in middle class American households, compared with some suggestive new findings about another English-speaking community--the Oakland Negro community studied by Claudia Mitchell.

The most exhaustive and carefully analyzed data of mother-child interaction and linguistic development are those of Roger Brown and his co-workers at Harvard (Brown and Bellugi, 1964; Brown Cazden, and Bellugi, in press; Brown and Hanlon, 1968; Cazden, 1968; Klima and Bellugi, 1966). Three children were followed over a number of years, beginning with the earliest period of grammatical development. Weekly or bi-weekly recordings were made in the children's homes. Two of the families were middle class intellectual; the third, from a lower income environment, was selected as a contrast case to the first two. While the situation was still one of mother-child interaction, the third mother was less verbal--though no less warm--than the other two. In two provocative recent papers (Brown, Cazden, and Bellugi, in press; Brown and Hanlon, 1968), Brown examines possible roles played by mother's speech in the process of language acquisition.

One possible role of the mother is to indicate to the child when he has failed to communicate properly. As Brown puts it: "Do ill-formed constructions

in child speech give way to well-formed constructions because there is a selection pressure in communication which favors the latter?" (Brown and Hanlon, 1968, pp. 50-51). To answer this question, Brown looked at the mother's responses to "primitive" and to "well-formed" constructions uttered by the child and asked whether the response indicated comprehension or failure to comprehend the child's meaning. Surprisingly, primitive and well-formed utterances were understood equally well by the mothers. Brown concludes:

> In general, the results provide no support for the notion that there is a communication pressure favoring mature construction.
>
> Coding the transcriptions for communication pressure one forms the impression that the primitive forms were understood perfectly well by adult interlocutors and indeed that they did not notice anything primitive or ill-formed about the constructions (Brown and Hanlon, 1968, p. 55).

If mothers are insensitive to the grammaticality of their children's utterances, it would be difficult to maintain that child language develops as a result of conscious tuition on the part of mothers. Following this argument, Brown looked at cases in which a child's utterance was followed by an expression of approval or disapproval on the part of the adult. Again, there is no evidence that parental responses shape the child's sense of grammaticality. In Brown's cogent summary:

> What circumstances did govern approval and disapproval directed at child utterances by parents? Gross errors of word choice were sometimes corrected, as when Eve said <u>What the guy idea</u>. Once in a while an error of pronunciation was noticed and corrected. Most commonly, however, the grounds on which an utterance was approved or disapproved . . . were not strictly linguistic at all. When Eve expressed the opinion that her mother was a girl by saying <u>He a girl</u> mother answered That's right. The child's utterance was ungrammatical but mother did not respond to the fact; instead she responded to the truth value of the proposition the child intended to express. In general the parents fit propositions to the child's

> utterances, however incomplete or distorted the utterances, and then approved or not according to the correspondence between proposition and reality. Thus Her curl my hair was approved because mother was, in fact, curling Eve's hair. However, Sarah's grammatically impeccable There's the animal farmhouse was disapproved because the building was a lighthouse and Adam's Walt Disney comes on, on Tuesday was disapproved becuase Walt Disney comes on, on some other day. It seems, then, to be truth value rather than syntactic well-formedness that chiefly governs explicit verbal reinforcement by parents. Which renders midly paradoxical the fact that the usual product of such a training schedule is an adult whose speech is highly grammatical but not notably truthful (Brown, Cazden, and Bellugi, in press, pp. 57-58).

The infrequency of adult correction of the grammatical form of child speech is also reported by our fieldworkers. Jan Brukman states that "certainly there is no evidence that children are ever corrected on matters of grammar. . . . I would say that most of the corrections are on matters of etiquette (like swear words)" (personal communication). Claudia Mitchell makes similar observations for her Oakland sample:

> Most of the corrections I observed by mothers to the group under five focused on speech etiquette rather than grammar. For example, a child enters the room and fails to greet the other adults present "Can't you say hello"; child interrupts a conversation "Wait until I am finished" or "Say excuse me first"; child uses taboo word; child fails to maintain a civil tone when speaking to mother; child in excitement uses speech which is garbled although intelligible. (Corrections were also made for truth value.) (personal communications)

In similar fashion, Keith Kernan reports: "I never heard anyone correct a child's speech in Samoa with the exception of telling a child not to use words considered to be 'profane'" (personal communication).

If adult response to child speech, then, does not seem to play a significant role in grammatical development, the peer group situations found in our field studies cannot be considered deficient in regard to this aspect of

language acquisition. That is, the probable lack of explicit tuition by other children is of as little importance as a similar lack in the case of children interacting with adults.

Could it be, however, that mothers provide an especially rich or useful sample of the language for the child's formation of grammatical rules? Brown has examined the frequency of occurrence of a wide variety of grammatical forms in the speech of the three mothers in his study. While there is obviously great difference in the frequency of occurrence of various forms in the speech of a given mother, the striking fact is that the profile of frequencies is remarkably similar for the three mothers. That is, "there seems to be something like a standard frequency profile for mother-to-child English" (Brown, Cazden, and Bellugi, in press, p. 50). Furthermore, these frequency profiles tend to be matched by the children, the more frequent forms emerging earlier in the child's language development. Brown reports:

> We have examined frequencies on many levels, from major sentences types all the way down to the several allomorphs of be, and the story is always the same: rank order correlations among the mothers and between each mother and her child ranging from .65 to .90 (Brown, Cazden, and Bellugi, in press, p. 49).

The more frequent forms also tend to be less complex in formal linguistic terms, so that the interrelated variables of frequency and complexity cannot be easily sorted out. But, at any rate, it seems clear that the child is making selective use of the input he receives, at least to the extent that he is brought to attend more to some forms than others.

Perhaps in this regard--in respect to the frequency profile of grammatical forms--mothers provide preschoolers with a different sort of input than that provided by older children. Are there any special grammatical characteristics

of the data base provided by Brown's "mother-to-child English"? The only place where this question can be approached in our field data is in the Oakland sample. There, you will remember, a major source of input to the preschooler is the speech of slightly older children. In Claudia Mitchell's data there is a recording of spontaneous talk between two little girls, one four and a half years old and one five. Presumably this is a limited example of the sort of speech heard by a preschool child in Oakland. Although the sample is small--328 utterances for the younger child and 461 for the older--the data are highly suggestive of a provocative conclusion. The frequency profiles seem to match those reported by Brown for his Cambridge mothers. The frequencies are given in Table 1, along with those for a Negro mother speaking to her two-year-old son. Compare these three profiles to the following summary of Brown's profiles:

> Some of the stable inequalities one might have guessed: active affirmative, declarative sentences are much more common than negatives or Yes-No interrogatives or Wh interrogatives, and well-formed passives are almost non-existent. Others are easy to understand but are not likely to have occurred to anyone who has not counted: the impersonal pronouns it, this, and that as sentence subjects almost always have their allomorph of be (is) as verb, whereas the personal pronouns I, You, he, etc. as subjects have a main verb much more often than an allomorph of be; Where questions are very much more frequent than When or How or Why questions; catenative semi-auxiliaries like wanna and gonna are much more frequent than the modal auxiliaries will or can, and may and must are seldom heard; the progressive inflection -ing is much more frequent than the regular past -ed, and irregular pasts (e.g., ran, saw, did) are more frequent than regular pasts; and so on (Brown, Cazden, and Bellugi, in press, pp. 49-50).

Most of these trends are reflected in Table 1. Of course, the figures given there are only suggestive, and the list of grammatical forms is as yet gross and scanty. Yet these comparisons do suggest that mother-to-child English may not be strikingly different from child-to-child English. If this suggestion finds further support, it may well be that children, universally, are exposed to a

special simplified version of the language of their community. The simplification may come about either because the speech input comes from other immature speakers or because adults make a special selection of grammatical forms when speaking to children.

Evidence for the latter suggestion comes from Kerry Drach's analysis of further data from Oakland. The Negro mother represented in Table 1 was also recorded in free conversation with another adult, her sister. Drach compared this woman's speech in the two situations of speech to a young child and speech to an adult. On every measure there were striking differences. The speech to the child consisted of short, complete, grammatical utterances, while that directed to the adult was long, rambling, complex, rapid, and frequently interrupted by false starts and hesitations. Tables 2a and 2b, from Drach, present examples of utterances from the two samples. The differences are strikingly apparent.

The speech of the Cambridge mothers, the Oakland mother, and the Oakland children suggests that there is a general and universal way of simplifying English. This simplification can be carried out by the child mind or by the adult mind in shaping utterances directed to the child. More broadly, it seems probable that all children in the English-speaking world go through universal stages of childish English, diverging only at some late point where special dialect features emerge in their speech. Certainly, this is the impression we have from a preliminary analysis of Claudia Mitchell's Oakland data. Consider, for example, the two columns of Table 3, where utterances of Oakland and Cambridge preschoolers are juxtaposed. In the absence of phonological and paralinguistic cues, there is no way to separate the children of the two speech communities, though Table 2a indicates that the transcribed utterances of Oakland and Cambridge adult speech could probably be distinguished.

This cursory survey, then, would suggest that everywhere children acquire basic grammatical competence in the first five or six years of life--regardless of social milieu or linguistic structure. Each child is equipped with a basic, strictly linguistic competence which can be differentially shaped to carry out a variety of sociolinguistic functions. The grammar of the language provides the child with a range of options for the expression of meaning, but, as Basil Bernstein's thoughtful and provocative work has shown, the choice among these options is determined by a complex variety of social factors (Bernstein, in press; Hawkins, 1968; Hawkins and Turner, in preparation; and elsewhere). A single example from Bernstein (1968) illuminates this point. The following two stories were both told by British children in response to the identical picture sequence. The children both possess basic linguistic competence in the formal sense, but note the vast difference in the choice among means of expression.

> Middle class. "Three boys are playing football and one boy kicks the ball and it goes through the window the ball breaks the window and the boys are looking at it and a man comes out and shouts at them because they've broken the window so they run away and then that lady looks out of her window and she tells the boys off." (13 nouns, 6 pronouns)
>
> Working class. "They're playing football and he kicks it and it goes through there it breaks the window and they're looking at it and he comes out and shouts at them because they've broken it so they run away and then she looks out and she tells them off." (2 nouns, 14 pronouns)

Bernstein has spelled out the implications of such differences. At this point the tools of the sociolinguist are needed. As we get deeper into our cross-cultural research at Berkeley, we hope to bring the perspectives of the psycho-linguist and the sociolinguist closer together in examining such questions as those raised here.

Table 1

Frequency of Occurrence of Grammatical Forms in the Speech of Two Oakland Negro Children and an Oakland Negro Mother Speaking to a 26-Month-Old Child*

Grammatical form	Frequency		
	Girl (4-1/2 yrs.)	Girl (5 yrs.)	Mother
Sentence types			
active, affirmative declarative	97	165	79
negative	31	53	4
yes/no interrogative	19	13	40
wh interrogative	12	14	17
passive	1	0	0
Lmpersonal pronoun + be	15	26	28
Lmpers. pron. + main verb	4	9	0
Personal pronoun + be **	7	5	19
Pers. pron. + main verb	132	153	84
wanna	3	3	5
gonna	7	9	9
Ima ***	3	4	0
will	1	0	0
can	10	10	11
may	0	1	0
must	0	0	0
where	3	0	0
why	0	0	2
how	0	0	1
when	0	0	3
-ing	13	26	15
-ed	0	7	0
irregular past	34	52	9

* Data gathered by Claudia Mitchell in Oakland, California.

** There were a few cases of personal pronoun with deletion of be: 3 cases for each of the children and 7 for the mother.

*** Ima is a contracted form of I'm gonna, as in Ima hit you.

Table 2a

Sample of Adult-Adult Speech: Negro Woman
Speaking to Her Sister*

An' then well now his father an' I are separated, so he sees me mainly.

An' then I try to do things with him and for him an' all to, kinda make up y'know for this.

But I can't, y'know, 'cause I can't put no man there to be a symbol for him or nothing.

You can take a chil' from basically--what you would call 'em--a bad environment.

No, I really--I really believe that--that church an' the Bible an' all, that's good.

It gives me a certain amount of consolation which allows me to relax my mind and start thinking intelligently an' putting my efforts all in one y'know force goin' in one direction rather than jus' y'know continually feeling sorry for yourself.

It takes a little time.

But they won't keep him at school because he's too sick.

I was on a inhalation series routine.

We wen' aroun' from ward to ward.

People are--y'know, that get all this mucus in their chest.

An' it's very important to breathe properly an' to be able to cough this muscus up and out an' through your chest, y'know as soon as possible.

And we couldn't sterilize the instruments, 'cause they were plastic.

---

* Tables 2a and 2b were prepared by Kerry Drach from data gathered by Claudia Mitchell in Oakland, California. The data belong to Claudia Mitchell and are to be cited with her consent. The same speaker is represented in Tables 1, 2a, and 2b.

Table 2b

Sample of Adult-Child Speech: Negro Woman
Speaking to 26-Month-Old Son

Come play a game wit' me.

Wanna play a game with me?

Come look at Mama's colorin' book.

You wanna see my coloring book?

Look at my coloring book.

Lookit, that's an Indian, huh?

Is that an Indian?

Can you say Indian?

Talk to me.

Watcha been doin' today?

What did you do today?

Look at that.

That's a funny picture, huh?

Oh...Wheee...Look.

What's that?

And that's a church, huh?

Table 3

Utterances of Oakland and Cambridge Preschoolers*

Oakland	Cambridge
That's not no bathroom.	It wasn't no chicken.
I'm not doing nothing.	I wasn't doing nothing.
I don't get no whipping.	I don't want no milk.
Nobody wasn't scared.	But nobody wasn't gonna know it.
Why bears can't talk?	Why I can't put them on?
But Renée or nobody wouldn't peel me no kinda orange.	Nobody won't recognize us.
Why she won't sit up?	Why we didn't?
	Why it's not working?
Nobody wouldn't help me.	No one didn't took it.
I don't have no suitcase.	It don't have no wings.
Never I don't get no whipping.	I never won't get it.

* The Oakland examples come from Claudia Mitchell's data. The Cambridge examples are cited in Ursula Bellugi's dissertation (1967); presumably, the account given of the development of negation applies in most respects to the Oakland Negro children as well.

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Some Suggestions for a Syntactic Characterization of Baby-Talk Style

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Speech 260 & 299

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Some Suggestions for a Syntactic Characterization of Baby-Talk Style

0. Introduction.

1. Syntactic analyses.

    1.1. Derivational complexity.

    1.2. Strict subcategorization.

Some Suggestions for a Syntactic Characterization of Baby-Talk Style

0. Introduction.

Studies of baby-talk style done so far have relied largely on a description of lexical items and semantic categories, intonational contours and pitch patterns, to characterize adult-to-child speech. Although such descriptions are, of course, to the point, they do little to explain the syntactic "simplicity" which the native speaker of English feels instinctively to typify baby-talk. Ferguson, for instance, deals mainly with the possible universals of baby-talk phonology and lexicon, drawing on research done in six languages.[1] As general phonological characteristics, he cites the predominance of the reduplication of parts of words and entire words; certain prevalent canonical forms, CVC, CVCV, and CVCCV, whose variation is dependent, at least in part, on the canonical forms of morphemes in the corresponding adult language; and the selection of more basic, simple kinds of consonants, stops, and nasals, in partic-

ular, and a relatively small vowel inventory. As general lexical characteristics, he cites a usual volume of twenty-five to sixty words; and the use of body parts, basic qualities, kin names and nicknames, and the names of nursery games as the categories most likely to have baby-talk words in them. Under "grammatical characteristics," Ferguson lists only the absence of inflectional suffixes, the presence of a baby-talk affix, the use of words in different grammatical functions, and, once again, the most likely semantic categories of baby-talk, as typical. Similarly, Casagrande's study of baby-talk in Comanche[2] covers much of this same phonological and lexico-semantic ground, supporting many of Ferguson's suggested general characteristics. All of this, however, does not touch on the question of whether or not some overall, empirically-observable type of syntactic simplicity can be said to exist in at least one language's baby-talk style. In spite of certain inherent and other not-so-inherent problems and limitations both in the nature of the data and in the methods used in the research, there were indications that such a syntactic specification of baby-talk style is indeed possible.

The data used was the transcripts of the adult-to-child speech in the records of Adam, Eve, and Sarah. From early, middle, and late points in these records, two hours with approximately the same number of utterances were chosen for each child, giving a total of eighteen hours of adult-to-child speech analyzed. One initial difficulty, perhaps of service to future researchers in this area, was that, for one of the children, the very first session's transcript was used as repre-

sentative of the early period; compared with the two later samples, it appeared to have far too many complex sentences and constructions, which will be shown to be more probable in the later periods. Upon closer examination and a little thought, it was decided that these occurrences were mostly due to the child's mother, and the particular cases capable of being interpreted as ostensibly addressed to one person, the child, but in reality for the benefit of another, the experimenter. For example, the mother at one time explains to the child exactly who a certain friend is and why he has moved; judging from the child's previous question, in which he has brought up the subject in the first place, he already knows these facts, so the mother may be explaining the background of certain events in the child's life to the experimenter, who she fears will not understand the sense of these utterances otherwise. Parallel cases of indirect commands to lower-status adults through children are plentiful, as in the case of one mother, with whose child I am working on a language-acquisition project and who seems to regard psycholinguist as synonymous with maid:

> MO: (to two-year-old child) Lisa, why don't you take Carol to the kitchen and show her where the cups and saucers and the coffeepot are, so that she can make us all some coffee?

In speech intended primarily for the child, constructions of this complexity and sentences of this length are rare. For the present study, then, a more central sample session was chosen for the early period; it would have been interesting, though, to see just how long overexplanations or indirect commands will continue before the speaker assumes that his addressee has enough familiarity with the subject or that his

addressee is close enough to him that he need no longer take precautions of elaborated syntax, either as an assurance of comprehension or of deference.

Two analyses were used to gauge the relative simplicity or complexity of the data, one a measure of the derivational complexity of the sentences, the other, a specification of the strict subcategorizational frame in which the verb or verbs in the sentence appear. The model for the derivational complexity analysis was that used by Brown and Hanlon in "Derivational Complexity and Order of Acquisition in Child Speech," expanded to include the wide range of complex sentences which was not present in the speech of the children of Brown and Hanlon studied, but which did appear in adult speech to those children. The Brown and Hanlon scale is ordered according to the increasing number of transformations, with a further degree on their scale indicating a more complex derivation for the sentence. Their scale omits passive and complex sentences for the simple reason that Adam, Eve, and Sarah, did not use them: it is easy, however, to extend their method to rating passive sentences; however, because of the many possible kinds of embeddings, conjoinings, and deletions involved in the different complex sentences used by the adults, a third parallel usage of this scheme is not possible, and the entire category of complex sentences will have to be thought of as somehow more complex and involving a separate kind of reorganization than the simple sentences as a whole. The basic types, then, are as follows:[3]

1. Simple, active, affirmative, declarative (SAAD)

   "John beats Mary."

2. Simple, active, affirmative, interrogative (Q)

   "Does John beat Mary?"

3. Simple, active, negative, interrogative (N)

   "John doesn't beat Mary."

4. Simple, active, affirmative, declarative, truncated (Tr)

   "John does."

5. Simple, active, negative, interrogative (NQ)

   "Doesn't John beat Mary?"

6. Simple, active, affirmative, interrogative, truncated (TrQ)

   "Does John?" (Also used as affirmative tag.)

7. Simple, active, negative, declarative, truncated (TrN)

   "John doesn't."

8. Simple, active, negative, interrogative, truncated (TrNQ)

   "Doesn't John?" (Also used as negative tag.)

A similar rotation in these slots may be imagined for passive sentences——that is, a Simple, passive, affirmative, declarative (SPAD) sentence, as represented by "Mary is beaten by John," and so forth. For the complex sentences, abbreviated CAAD, CAND, etc., a more general notion of derivational complexity must be used, as was mentioned. Brown and Hanlon's cumulative derivational complexity scale must be thought of as starting out with the same basic entity in the case of all complex sentences, being considered more complex only as it becomes a negative, an interrogative, or one of the other types of sentences noted on the preceding page; were the complex sentences them-

selves taken from the point of view of their constituent sentences rather than as starting points, of course, the picture would be a rather different——and much more complicated——one. Luckily for the validity of the study, however, the complex sentence group as a whole turned out to be characteristic of the later periods of adult-to-child speech, and hence the simple-versus-complex dichotomy is a suitable one here. For a more exhaustive study of exactly how baby-talk style loses its syntactic simplicity, a precise statement of the types of embedding and conjoining, and the various numbers of transformations involved, would no doubt be valuable. The cumulative derivational complexity scale of the basic types of sentences, then, which may be extended in a like way for passives and, limitedly so, for complex sentences, is as follows:[4]

SAAD $\langle$ Q $\langle$ NQ, TrQ, TrNQ	4 predictions
SAAD $\langle$ N $\langle$ NQ, TrN, TrNQ	4 predictions
SAAD $\langle$ Tr $\langle$ TrQ, TrN, TrNQ	4 predictions
SAAD $\langle$ NQ $\langle$ TrNQ	2 predictions
SAAD $\langle$ TrQ $\langle$ TrNQ	2 predictions
SAAD $\langle$ TrN $\langle$ TrNQ	22 predictions
SAAD $\langle$ TrNQ	1 predictions

Here, the notation A $\langle$ B means that A is derivationally less complex than B; the separation by commas means that the sentence types so noted are not meant to be ordered relative to one another in this writing; the listing gives each independent prediction only once——since Q $\langle$ NQ is given in the first line, it is not repeated in the fourth;

the sentence types are not completely ordered in terms of derivational complexity, as there is not an order for the pairs Q and N, Q and Tr, N and Tr; Q and TrN, N and TrQ, Tr and NQ; NQ and TrQ, NQ and TrN, TrQ and TrN. This scheme of partial ordering is easily thought of by the following overall representation:

Q NQ

SAAD N TrQ TrNQ

Tr TrN

Brown and Hanlon also bring out a caution in regard to the class of simple sentences similar to that necessary for the complex group: namely, that SAAD sentences are not uniform in the number of rules required for their derivations, so that one may have a single auxiliary, another two or three, still another may need complex selection rules and transformations to accomplish number agreement. Although the simple sentences are not ordered with respect to one another, the Q, N, Tr, and other versions of any SAAD will all be more complex than the original SAAD itself. Brown and Hanlon emphasize the difficulty of obtaining exact or even close counterparts in a naturalistic study, a problem which they believe somewhat justifies the classification of all simple sentences in a single group (and, in this study, the classification of all complex sentences in a similar group).

Since the findings of this study, unlike that of Brown and Hanlon, may have important implications for the charge of "degenerate input" that is often used to characterize adult-to-child speech, the question arises as to just what part of the adults' speech was considered sentences proper, and therefore counted as a complete utterance and analyzed according to

the previous scale and according to strict subcategorizational frame, and what part was considered fragmental. In the process of separating the complete sentences from the sentence fragments, these fragments were themselves classified, to see if the "ungrammaticality" of the adults' degenerate input was capable of being systematized in some way. The results of this classification seem to show that, for the majority of sentence fragments addressed to the child, there are either regular rules for sentence ellipsis at work in the utterance, which have reduced it and which the child must master as a vital part of his complete knowledge of the language, anyway; or the sentence fragment may be understood as the logical completion of another person's sentence, in anticipation or in answer to a question; or as a sentence which repeats the child's previous utterance, and will hence be fragmental or even ungrammatical for the adult's grammar, but usually consistent with the child's, as when the mother's option to expand the child's utterance is not taken. The occurrence of sentences which are to be classed in either one of these categories, and are really ungrammatical by adult-grammar standards, are, then, definitely in the minority, as shown by the table on the next page. For the purposes of this study, sentence fragments of the first type were not analyzed according to derivational complexity, although these often omitted only a subject and therefore included most of the same derivational information as the unabbreviated form, it was felt that a complete consideration of the rules of ellipsis involved and the additional transformations that were necessary for those rules best belonged in a separate study. Sentence fragments of the first type were, however, classified for

Table I. Complete sentences versus Sentence fragments.

A. Speech of adults to Adam, 1,439 utterances.

	% Complete Ss		% S-fragments Type I	Type II	Type III
1. Early records:	Hour 1: MO: 53%	55%	45% 20%	22%	1%
	EX: 2%		1%	1%	0%
Total: 430 utterances	Hour 2: MO: 54%	55%	45% 20%	18%	1%
	EX: 1%		1%	5%	0%
2. Middle records:	Hour 1: MO: 56%	61%	39% 18%	18%	1%
	EX: 5%		1%	1%	0%
Total: 522 utterances	Hour 2: MO: 55%	60%	40% 19%	18%	1%
	EX: 5%		1%	1%	0%
3. Late records:	Hour 1: MO: 63%	69%	31% 12%	14%	0%
	EX: 6%		2%	3%	0%
Total: 487 utterances	Hour 2: MO: 64%	70%	30% 12%	15%	0%
	EX: 4%		2%	3%	0%

B. Speech of adults to Eve, 1,568 utterances.

1. Early records:	Hour 1: MO: 49%	51%	49% 20%	23%	0%
	EX: 2%		4%	2%	0%
Total: 566 utterances	Hour 2: MO: 47%	48%	52% 22%	22%	1%
	EX: 1%		5%	2%	0%
2. Middle records	Hour 1: MO: 57%	59%	41% 15%	16%	1%
	EX: 2%		2%	7%	0%
Total: 382 utterances	Hour 2: MO: 59%	62%	38% 16%	11%	0%
	EX: 3%		5%	6%	0%
3. Late records:	Hour 1: MO: 70%	72%	28% 12%	13%	0%
	EX: 2%		2%	1%	0%
Total: 620 utterances	Hour 2: MO: 68%	73%	27% 10%	9%	1%
	EX: 5%		3%	4%	0%

C. Speech of adults to Sarah, 1,417 utterances.

1. Early records:	Hour 1: MO: 52%	54%	46% 20%	22%	0%
	EX: 2%		2%	2%	0%
Total: 343 utterances.	Hour 2: MO: 50%	55%	45% 22%	18%	0%
	EX: 5%		4%	1%	0%
2. Middle records:	Hour 1: MO: 55%	57%	43% 17%	15%	2%
	EX: 2%		8%	1%	0%
Total: 498 utterances	Hour 2: MO: 54%	57%	43% 16%	20%	0%
	EX: 3%		6%	1%	0%
3. Late records:	Hour 1: MO: 58%	62%	38% 15%	19%	0%
	EX: 4%		2%	2%	0%
Total: 576 utterances	Hour 2: MO: 50%	59%	41% 20%	15%	0%
	EX: 9%		4%	2%	0%

the strict subcategorizational frame in which the verb appeared, the fragments of this type sometimes conveying just the same information about the verb as anabbreviated form, of course; when applicable to the secong type of fragments, which was not as often the case, the same rationale holds.

The system of strict subcategorization of verbs is basically that of Chomsky's Aspects of a Theory of Syntax,[5] as modified by Kavan in "Some Notes on Strict Subcategorization." As wider familiarity with methods of strict subcategorizational notation than with Brown and Hanlon's cumulative derivational complexity scale is assumed, examples of the frames will not be given.

A definite limitation to this study is that no natural adult-to-adult speech is available for a comparison with the adult-to-child records. The syntactical complexity of the later transcripts relative to the earlier ones is some indication that baby-talk style is probably at work in the earlier records, which show an unnaturally large number of simple sentences (the special way in which these simple sentences can be considered to mark baby-talk style will be discussed later). Besides this, a thousand-word sample from the Soskin and John transcripts used for "The Study of Spontaneous Talk" was subjected to the same analyses of derivational complexity and strict subcategorizational frame of the verb. The results of this appear on the next page,[5] and it is hoped that they will help somewhat to remedy the deficiency.

A final point to be made is that the transcripts analyzed here from the records of the adults working with Adam, Eve, and Sarah, are representative of only one sub-style of baby-talk style. All the samples come

Table II. Syntactic analyses of Soskin and John transcripts.

Table II.A. Complete sentences versus Sentence fragments.

% Complete Ss	% S-fragments		
	Type I	Type II	Type III
71%	4%	24%	1%

Table II.B. Derivational complexity analysis.

Simple Ss		Passive Ss		Complex Ss	
1. SAAD	39%	1. SPAD	3%	1. CAAD	11%
2. Q	16%	2. Q	0%	2. Q	2%
3. N	14%	3. N	1%	3. N	1%
4. Tr	5%	4. Tr	1%	4. Tr	0%
5. TrN	1%	5. TrN	0%	5. TrN	0%
6. TrQ	1%	6. TrQ	0%	6. TrQ	0%
7. TgQ	1%	7. TgQ	0%	7. TgQ	0%
8. NQ	4%	8. NQ	0%	8. NQ	0%
9. TrNQ	0%	9. TrNQ	0%	9. TrNQ	0%
10. TgNQ	0%	10. TgNQ	0%	10. TgNQ	0%
Total: 81%		Total: 5%		Total: 14%	

(In Table II.A., the three types of sentence-fragments again refer to the description on page 8; where the first type is defined as a repetition of the child's utterance there, for the adult interaction in the Soskin and John, the function that these repetitions serve for clarification, expansion, or reassurance is apparently unnecessary, barring channel difficulties such as a foreign accent or hearing problems. The thousand-word sample was taken from that period when Roz and Jock were talking with Flo and Ben. An exactly parallel situtiion to that of the Mother and Experimenter trying to elicit speech from the child could not, of course, be obtained; hopefully, however, this conversation between adults in an informal social setting will be more natural than the very abbreviated utterances used between two people who are on familiar terms with one another, as shown by the "code" that Roz and Jock use when they are alone.)

Table II.C. Strict subcategorizational analysis.

Frame	Frequency
1. __#	10%
2. __ ⌒ Man	10%
3. __ ⌒ Adj	1%
4. __ ⌒ PN(PredNom)	10%
5. __ ⌒ like ⌒ PN	2%
6. __ ⌒ PP	1%
7. __ ⌒ NP	30%
8. __ ⌒ NP ⌒ Man	1%
9. __ ⌒ NP ⌒ PP	15%
10. __ ⌒ NP ⌒ NP	5%
11. __ ⌒ NP ⌒ (of ⌒ Det ⌒ N) ⌒ S'	.5%
12. __ ⌒ (that) ⌒ S'	15%
13. __ ⌒ Man ⌒ (that) ⌒ S'	.5%

(This analysis of the frames in which verbs appeared is not meant to represent the overall length of the sentence, of course, but simply to record the obligatory frame in which the verb used must fit. From merely looking at the percentages given here, there does not seem to be that much difference between these figures and those of the early stages of adult-to-child speech. In this adult-to-adult speech, however, the frequency of added optionalconstituents——another Adj PP, Man, relative clause, and so forth——was 77%; this figure is not unlike the frequency for the late stages of adult-to-child speech, but presents a definite contrast to the early stages, as it will be shown.)

from a single situation, in which the main function of the adults' speech to the child is to produce action, verbal response, or proof of comprehension in the child. Other sub-styles are possible: one would be speech to the child that is part of an expressive-excogitative routine on the part of the adult, where there is no intent to evoke a particular response or any response at all from the child. An example of this would be the mother who uses the presence of her child as an excuse to verbalize her thoughts while going about her daily routine. Another type would be that variety of speech used when the child is the audience, where the speaker is talking to someone else primarily. If samples of all three of these sub-styles of baby-talk were analyzed, perhaps there might be evidence of a stylistic breakdown, and the adult's speech in the second and third types mentioned might have fewer of those characteristics that will be seen to be representative of the first type, according to the present data.

1. Syntactic analyses.

1.1. Derivational complexity.

The analysis of the relative derivational complexity of the earliest to the latest speech samples taken for the adults working with Adam, Eve, and Sarah, suggest that the child's linguistic sophistication may be a cue for the adult to use a sentence marked by a "baby-talk" degree of complexity or to use a sentence whose complexity is more characteristic of adult-to-adult speech. The following tables show that, early in the records of all three children, the predominant sentence-types were the

Table III. Derivational complexity analyses for Adam, Eve, and Sarah.

Table III.A. Derivational complexity analysis for Adam.

(I=two hours from early period averaged together; II=two hours from middle period, III=two hours from late period.)

Simple Ss	I	II	III	Passive Ss	I	II	III	Complex Ss	I	II	III
1. SAAD	47%	39%	42%	1. SPAD	.5%	0%	0%	1. CAAD	2%	8%	10%
2. Q	25%	22%	20%	2. Q	.5%	0%	0%	2. Q	1%	6%	7%
3. N	18%	11%	15%	3. N	0%	0%	0%	3. N	2%	8%	2%
4. Tr	2%	1%	1%	4. Tr	0%	0%	0%	4. Tr	0%	0%	0%
5. TrN	0%	0%	0%	5. TrN	0%	0%	0%	5. TrN	0%	0%	0%
6. TrQ	.5%	1%	.5%	6. TrQ	0%	0%	0%	6. TrQ	0%	0%	0%
7. TgQ	0%	0%	0%	7. TgQ	0%	0%	0%	7. TgQ	0%	0%	0%
8. NQ	.5%	1%	1%	8. NQ	0%	0%	0%	8. NQ	0%	2%	.5%
9. TrNQ	0%	0%	0%	9. TrNQ	0%	0%	0%	9. TrNQ	0%	0%	0%
10. TgNQ	1%	1%	1%	10. TgNQ	0%	0%	0%	10. TgNQ	0%	0%	0%
Totals:	94%	76%	80.5%		1%	0%	0%		5%	21.5%	19%

Table III.B. Derivational complexity analysis for Eve.

Simple Ss	I	II	III	Passive Ss	I	II	III	Complex Ss	I	II	III
1.SAAD	48%	46%	32%	1.SPAD	0%	0%	.5%	1.CAAD	3%	9%	8%
2. Q	31%	25%	26%	2. Q	0%	0%	0%	2. Q	0%	5%	7%
3. N	13%	10%	14%	3. N	.5%	0%	0%	3. N	0%	1%	4%
4. Tr	1%	1%	0%	4. Tr	0%	0%	0%	4. Tr	0%	0%	0%
5. TrN	0%	0%	.5%	5. TrN	0%	0%	0%	5. TrN	0%	0%	0%
6. TrQ	2%	1%	.5%	6. TrQ	0%	0%	.5%	6. TrQ	0%	0%	0%
7. TgQ	0%	0%	0%	7. TgQ	0%	0%	0%	7. TgQ	0%	0%	0%
8. NQ	.5%	1%	.5%	8. NQ	.5%	0%	.5%	8. NQ	0%	0%	6%
9. TrNQ	0%	0%	0%	9. TrNQ	0%	0%	0%	9. TrNQ	0%	0%	0%
10. TgNQ	.5%	1%	0%	10. TgNQ	0%	0%	0%	10. TgNQ	0%	0%	0%
Totals:	96%	85%	73.5%		1%	0%	1.5%		3%	15%	25%

Table III.C. Derivational complexity analysis for Sarah.

	Simple Ss			Passive Ss			Complex Ss		
	I	II	III	I	II	III	I	II	III
1. SAAD	52%	49%	49%	1. SPAD 0%	.5%	1%	1. CAAD 5%	4%	4%
2. Q	22%	32%	35%	2. Q 0%	0%	0%	2. Q 0%	1%	3%
3. N	15%	7%	5%	3. N 0%	.5%	0%	3. N 1%	1%	2%
4. Tr	2%	1%	1%	4. Tr 0%	0%	0%	4. Tr 0%	0%	0%
5. TrN	0%	0%	0%	5. TrN 0%	0%	0%	5. TrN 0%	0%	0%
6. TrQ	1%	1%	0%	6. TrQ 0%	0%	0%	6. TrQ 0%	0%	0%
7. TgQ	0%	0%	0%	7. TgQ 0%	0%	0%	7. TgQ 0%	0%	0%
8. NQ	1%	1%	0%	8. NQ 0%	0%	0%	8. NQ 0%	0%	0%
9. TrNQ	0%	0%	0%	9. TrNQ 0%	0%	0%	9. TrNQ 0%	0%	0%
10. TgNQ	1%	1%	0%	10. TgNQ 0%	0%	0%	10. TgNQ 0%	0%	0%
Totals:	94%	92%	90%	0%	1%	1%	6%	7%	9%

SAAD, SNAD, and SAAQ, with very few occurrences of passive or complex types. In the later records of Adam and Eve, however, there is a marked rise in the complex sentence-types, the percentage climbing toward a figure more typical for the adult-to-adult speech; at this later period, both Adam and Eve themselves were becoming able to make derivationally-more involved sentences---though, it must be pointed out, not the same complicated varieties that the adults began using with them. In the later records of ~~Eve~~ Sarah, on the contrary, the rise in complex sentences is slight compared to the other two; Sarah, by the final period, had not achieved a measure of linguistic sophistication equal to that of Adam and Eve. If, therefore, the adult speaker does gradually increase the derivational complexity of the sentences in his speech, as this study shows he does, and if the impetus for this change is to gauge the linguistic abilities of the child with whom he is talking, as this study also demonstrates, then the adult speaker's conception of what constitutes "simplicity" or "complexity" seems to be at variance with what the child's grammar, as defined by his abilities, show to be simplicity and complexity. The spur for the adult's use of sentences characteristic of adult-to-adult conversation, in which (in terms of derivational complexity) the high occurrence of complex sentences is the most striking difference from the early adult-to-child speech, is not the production of those same complex sentences by the child, but rather other developments in the child's linguistic capabilities. For Adam and Eve, the Brown and Hanlon paper reports that, at the period when these later speech samples were taken, the two children had acquired the following

abilities: Adam had progressed from an absence of N,Q,Tr, TrN, TrQ, NQ, and TrNQ sentence-types, to a middle period with examples of N, Q, and TrN but none of the other above-mentioned, to a final stage with representatives for all of them; Eve had progressed from an initial period with, of the above seven types, only Q and Tr examples, to a middle period with these plus N, TrN, and TrQ, to a final period with all seven represented. Sarah, in contrast, had none of the seven types at the outset, and by the middle stage had acquired only the N; by the final period, she had acquired the N, Q, Tr, and TrN, but not the TrQ, NQ, and TrNQ types. The adults' response to the emergence of this increasing linguistic sophistication in the children, when there is an increase, then, is not a response in kind——more of the types of constructions which the children had newly become capable of producing, as one might expect if baby-talk syntax were in fact an accurate reproduction of the child's own syntax——but rather a response which begins to treat the child as a linguistic or stylistic equal, using more syntactically complex sentences which have been shown to be typical of adult-to-adult speech.

1.2. Strict subcategorization.

The strict subcategorizational analysis was used at first in the hope of devising a way to specify the most likely verb frames in baby-talk syntax, which it was thought would be somehow simpler——that is, a high occurrence of ___ $\widehat{\text{NP}}$, ___ $\widehat{\text{NP}}$ $\widehat{\text{PP}}$, and ___#. This turned out to be true, as the following tables will show; however, the percentages for the occurrence of these frames are not greatly different from those of the adult-to-adult speech recorded by Soskin and John——the similar-

Table IV. Strict subcategorizational analysis.

Frame	Adam I	Adam II	Adam III	Eve I	Eve II	Eve III	Sarah I	Sarah II	Sarah III
1. ___	8%	6%	11%	5%	1%	7%	6%	3%	1%
2. ___ Man	9%	5%	10%	5%	1%	7%	5%	1%	.5%
3. ___ Adj	3%	5%	2%	5%	4%	5%	2%	1%	.5%
4. ___ PN	26%	24%	20%	29%	25%	19%	15%	28%	20%
5. ___ like PN	1%	0%	1%	0%	0%	0%	2%	0%	3%
6. ___ PP	5%	4%	3%	10%	2%	0%	9%	3%	2%
7. ___ NP	45%	43%	29%	49%	39%	32%	47%	44%	49%
8. ___ NP Man	1%	1%	4%	0%	2%	1%	0%	1%	5%
9. ___ NP PP	1%	4%	2%	1%	5%	7%	2%	5%	2%
10. ___ NP NP	1%	3%	5%	1%	7%	6%	7%	9%	10%
11. ___ NP (of Det N) S'	0%	0%	0%	0%	0%	0%	0%	0%	0%
12. ___ (that) S'	0%	5%	11%	0%	14%	16%	5%	5%	6%
13. ___ Man (that) S'	0%	0%	2%	0%	0%	0%	0%	0%	0%

(I, II, and III refer to early, middle, and late samples)

ity between the adult-to-adult speech and the last stage of baby-talk is especially striking, since this last stage has more of the complex sentences which also characterize adult-to-adult speech. The three frames mentioned above seem simply to be those most frequent in conversation for adult speech, regardless of the age of the addressee; the only difference is in the number of optional constituents which the speaker chooses after he has satisfied the obligatory requirements of the frame. At first glance, this might seem to be merely a restraint on the gross length of the sentence in adult-to-child speech: it has been pointed out, however, that not just any short sentence will be likely to occur in the first stages of baby-talk. Even in the earliest samples, there were examples of simple sentences using concatenation, for instance, that were much longer than the more-frequent complex sentences of the last stage. As well as this condition on the type of sentence which will be preferred, simple or complex, there will also be a restriction on the amount of "extra" semantic information (in the form of modifying prepositional phrases, extra manner adverbials, and so on) that the speaker of baby-talk will use. This is somewhat reminiscent of the telegraphic utterances that children begin their language with, and of the more general and (to the adult) ambiguous semantic range of the child's lexicon, which often results in sentences which seem, by the standards of the adult grammar and adult-to-adult conversational style, to be boiled down to the bare essentials. Such is in fact the case as far as the verb phrase is concerned: besides avoiding the additional embeddings and conjoinings of complex sentence structure, the frequency of added constituents not obligatory to the frame of the verb phrase was only 19% for the early stage for Adam, 22% for the

same stage for Eve, and 18% for Sarah; 33% for the next stage for Adam, 29% for Eve, and 30% for Sarah; 59% for the last stage for Adam, 47% for Eve, and 32% for Sarah (lower than the other two, by the way); as compared with a 77% frequency for the adult-to-adult interaction recorded by Soskin and John. There is, then, apparently a process through which the adult changes his style of speech to the child which can be partially characterized by the increasing amount of "extra" semantic information in the form of certain key category symbols (PP, Man, Adj) he uses to the child; the frequency of this "extra" information will increase gradually until it begins to approximate the adult-to-adult usage. The somewhat delayed frequencies for Sarah suggest that this characteristic subcategorizational simplicity may, as was the derivational simplicity, be cued by the relative sophistication of the child's own grammar.

Footnotes

1. Charles A. Ferguson, "Baby-Talk in Six Languages," in American Anthropologist, Vol. 66, No. 6, Part 2, December, 1964, pp. 103-114.

2. Joseph B. Casagrande, "Comanche Baby Language," in Language in Culture and Society, ed. by Dell Hymes, pp. 245-250, New York, Harper and Row, 1964.

3. Brown and Hanlon, "Derivational Complexity and Order of Acquisition in Child Speech," pp. 13-14.

4. Ibid., pp. 14-15.

5. Noam Chomsky, Aspects of a Theory of Syntax, pp. 120-123, 148, 158, 164-165.

6. Brown and Hanlon, op. cit., pp. 33-35.

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THE LANGUAGE OF THE PARENT: A PILOT STUDY

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Prior to the advent of transformational linguistics and its subsequent impact on psychological theorization on language behavior, American psychologists in general ascribed primary importance to the role of parental language and other linguistic input in the child's language learning process. In particular, learning theorists attempted to explain the acquisition process in terms of various S-R paradigms in which adult speech serves as a model for the child to imitate. Only through a gradual process of conditioning, based mostly on imitation of parental speech, could the child learn to speak.

Many psycholinguists are currently turning to transformational linguistic theory for further insight into the problem of language acquisition. A by-product of this shift in theoretical models has been emphasis on language as a species specific behavioral pattern for which the human nervous system is pre-programmed to learn (Lenneberg, 1967). Such researchers now feel that some aspects of linguistic structure, the so-called language universals, are innately represented in the structure and functioning of the human nervous system and the articulatory apparatus. For instance, it has been hypothesized that all normal children are born with a neurally represented universal base component grammar common to all natural languages. The new-born infant has only to discover those transformational rules necessary to map the output of his base component into the surface structure of the language which he is learning.

This theoretical position has resulted in a view radically different from that of the learning theorists regarding the role of parental input in the child's language acquisition. Indeed, some (cf. Lenneberg, 1967) have suggested that only a minimum of language input from the environment is necessary for the child's normal linguistic development. Although McNeill (1966) agrees that parental language "serves the function of helping a child to choose among a narrow set of possibilities defined by the linguistic universals", he seems to limit the specific role of parental language to the child in order to highlight the importance of what he called LAD, the language acquisition device, physiologically present at birth. It is thus no surprise that McNeill continued: "...the speech of adults from which a child discovers the locally appropriate manisfestation of the linguistic universals is a completely random, haphazard sample, in no way contrived to instruct a child on grammar." If it is true that parental speech to young children is a "completely random, haphazard sample" of adult speech in general, then a great deal of language specific structure must be attributed to the new-born human nervous system.

The question being raised here is whether or not parental linguistic input to the child really is such a random sampling of adult speech in general. I became interested in this problem along with two colleagues at the University of Michigan, Walter Hull and Barbara Coffman. It seemed to us that adult speech to children is quite different from adult speech to other adults, but a survey of the literature on this topic revealed few studies concerning linguistic input to the child other than some anthrophological studies concentrating on baby-talk lexicon (cf. Ferguson, 1964) and some studies on prosody in parental speech (Ohnesorg, 1959, 1960). But we found no systematic general linguistic comparisons of adult speech to children with the <u>same</u> adults' speech to other adults. Only such a comparison can answer adequately the question of whether

or not there is a specific style of speech used when speaking to young children learning to talk. Thus, we proposed a program of research in which parental speech to children would be studied longitudinally as the child acquires language. This speech would at every stage be compared with speech from the same parents with other adults in order to see if there are systematic differences that change as the child becomes more and more competent linguistically. In addition, we felt that such a research program must study families of different socio-economic and cultural background in order to establish any observed differences in structure are a general or only an idiosyncratic phenomenon.

Many language parameters are of interest here. The ones which shall be discussed in this paper are utterance length, rate of speech, lexical variability, and syntactic structure. This list does not exhaust all possibly relevant parameters. In particular prosody (intonation and stress) should be studied. However, no attempt was made in this pilot study to do so.

The work that I am reporting here is, as just said, a pilot study in which the speech of one mother to her 26 month old child was compared to the speech of this same woman to two other women. I have been working on these speech samples with Ben Kobashigawa, also at the University of Michigan. The aspects of input structure which he has been studying, namely, repetitions in the mother's speech to the child, will be reported in a separate paper.

The reader should keep in mind that the results presented in this paper are only pilot results. Although the differences observed between the two speech samples are compelling, the analysis of one woman's speech from one type of cultural and socio-economic background is not sufficient to allow general statements about differences between parental speech to children and normal adult-adult speech. In addition, throughout the following discussion it is assumed that the sample of adult-adult speech being analyzed is representative of this woman's normal adult-adult speech. The question of what is normal adult-adult speech is not simple to answer. The woman under study here, for instance, might speak in the manner observed in the adult-adult sample only when speaking to the two other women recorded. She may speak in a completely different style when at work, or when speaking with her close relatives, etc. Both of these problems limit severely the possibility to draw conclusions from the data presented.

Materials and Preliminary Method

The two samples of taped speech analyzed in this study were collected by Claudia Mitchell (Berkeley). Both contain substantial samples of speech from a black woman residing in Oakland, California. In the adult-child (A-C) sample this woman is speaking with her 26 month old son. In the first part of the recording session, the mother attempted to elicit a set of sentences from the child. This part of the tape was not used; only free conversational data were analyzed. In the adult-adult (A-A) sample the same woman was recorded in an informal conversation with Claudia Mitchell and another woman about jobs, religion, household concerns, finances, etc. No attempt was made to analyze the speech of the child in the A-C sample or of the other two women in the A-A sample.

After transcribing the tapes, it was necessary to divide the mother's speech into separate utterances to enable linguistic analysis. This was a straightforward task for the A-C sample since most of the speech strings there were short, preceded and followed by substantial pauses, indeed, usually preceded and followed by short utterances from the child. In the A-A sample, however, the task of segmentation was considerably more difficult. Terminal intonation contours, for instance, were not always a reliable guide to utterance segmentation since frequently two or more fully developed strings were concatenated one after the other using the forms "and" or "or" as connectors, all under one intonation contour. In addition, false starts were highly frequent in the A-A sample (but almost non-existant in the A-C sample!), which made segmentation even more difficult. Finally, there were often long pauses within strings at places which did not seem to mark sentence boundaries at all. Therefore, it was decided to use three linguistic markers to discriminate utterance boundaries: final intonation contour, the connectors "and" or "or" when used to concatenate syntactically sufficient strings (the researcher's linguistic intuition was, of course, the criterion for syntactic sufficiency), and the boundaries around false starts. Using this triple criterion we were able to achieve fairly high agreement in segmenting both speech samples into separate utterances.

In this manner three main classes of utterances were differentiated: (1) fully developed, syntactically sufficient sentences; (2) brief segments not analyzable syntactically such as "hi", "one o'clock", etc.; and (3) false starts. For the most part only the fully developed sentences will be discussed here. Samples of such sentences from the two tapes are presented in Tables I(a) and I(b). Once the transcribed texts were segmented into such utterances it was possible to compare the two samples of speech on the several parameters mentioned above. The methods of analysis and results for each parameter will be presented separately. Statistical analyses are presented where completed.

Utterance Length

Method: A morpheme count was made on the first 111 syntactically sufficient sentences in each sample. In general, the count was made in reference to standard American English usage, so that forms such as "wanna" and "gonna" were counted as consisting of two (want+to) and three (go+ing+to) morphemes each, respectively. Such marginally linguistic items as "huh" and "uh-huh" were counted as one morpheme each. Pausefilling "uh" and within utterance repetitions of items were not counted. Zero morphs such as past tense marker of the verb "to hit" were counted.

Results: The results from the morpheme count are presented in Figure 1 and Table II. As is immediately apparent in Figure 1, the shape of the frequency distribution of length in terms of morphemes per sentence is radically different for the two samples. First of all, the A-A sample is clearly more variable in length of utterance than the A-C sample. The non-overlapping 99% confidence intervals for the variances support this observation statistically. This difference in variance indicates that heavy restrictions on length are imposed in the mother's speech when speaking to her child. That this difference in

variance cannot be due simply to a "bottoming" effect because of the smaller mean length found in the A-C sample (see below) is fairly clear from Figure 1.

Not only do the two samples differ in terms of variability in length, but they also differ in terms of average length. As seen in Table II, the sentences in the A-A sample were on the average 2.5 times as long as the sentences in the A-C sample. However, testing this difference proved somewhat problematic statistically. On the one hand, since non-homogeneity of variance for the two samples has already been demonstrated, it seems clear that the parametric t-test cannot be used. However, related non-parametric tests are also inappropriate because of the extremely large number of tied scores found in the data. (Length of sentence in terms of the number of morphemes is a discrete, not a continuous variable.) One solution would have been to perform a logarithmic transformation on all the scores in the two samples in order to equate the sample variances, and then to apply the t-test to the transformed scores. However, such an operation seemed unnecessary since the difference observed was so striking. Thus, although the assumption of homogeneity of variance was violated, a t-test was performed. This procedure was further legitimized by the large sample size. The test yielded a highly significant t-value ($t=9.614$; $df=220$; $p<.001$). Thus, it seems fairly safe to conclude that the two samples differed from one another in terms of both the mean length and in the variability in length. The A-A sample had on the average longer sentences than the A-C sample and was more variable in length of sentence than the A-C sample.

Rate of Speech

Method: 35 fully developed utterances were randomly selected from each sample. The temporal length of these utterances was measured to the nearest 1/10 of a second using a stop-watch. Each measurement was repeated three times from the tape-recording; the mean value of the three measurements was used to calculate the ratio of the number of syllables in the utterance to the amount of time taken to articulate the same utterance. In this manner the rate of speech in terms of the number of syllables per second was established for the two samples of 35 sentences each.

Results: The results from this measure are summarized in Table III. Although the variability in rate was somewhat higher in the A-A sample than in the A-C sample, the difference is not significant. The mean scores indicate that rate of speech was greater in the A-A sample than in the A-C sample. The difference between the means was tested statistically and found to be significant ($t=2.07$; $df=68$; $p<.05$). Thus it is concluded that the mother spoke on the average faster to the other two women than to her child.

This difference in mean rate of speech would have been more accentuated if intra-utterance pause had been controlled for. As was mentioned above, there was a high incidence of long pauses within sentences in the A-A sample but very few in the A-C sample. Since the method used here to measure length of sentence in terms of seconds did not separate out such intra-utterance pause, the actual mean rate of speech will be a little higher for the A-A sample shown in Table III. Thus, the error introduced by the method used to measure rate of speech favored

the null hypothesis of no difference. As a consequence we can be even more certain that the significant difference observed is a real difference in rate of speech.

Lexical Variability

Method: Type-token ratios were calculated for the first 1000 words of running text in each sample. In this analysis words in sentence fragments were also counted. Certain problems were encountered in deciding what was and was not a word. A few conventions developed to deal with the most frequent ambiguities are the following:

(1) Products of morphophonemic alteration such as "gotta", "wanna", "kinda", and "sorta" were counted as two words (types) each (got+to, want+to, kind+of, and sort+of).
(2) Canonical unmarked forms as "do" and "be" were considered as single types, tokens of which could be "did" and "does" for "do", and "are", "were", "-'s", and "-'re" for "be".
(3) "-n't" was counted as a token of "not".
(4) The extremely frequent "y'know" in the A-A sample was counted as a single type in itself.

Results: The type-token ratios calculated for the A-A and A-C samples were .282 and .207, respectively (Table IV). In that the type-token ratio itself is a measure of variability, i.e., variability in the choice of lexical items, we see as we did in the morpheme count discussed above that the A-A sample is more variable than the A-C sample. The mother used a greater variety of lexical items when speaking with the other adults than she did when speaking to her own child. (This difference has not been tested statistically. The tests necessary are at present outside my statistical competence.)

Syntactic Structure

Two different questions can be asked about the syntactic structure of the speech samples under analysis here. One asks whether the two samples differ in terms of syntactic complexity, a parameter which might, for instance, be measured in terms of the average number transformations found in the derivational history of a string. The other asks whether the two samples differ in terms of how frequently specific syntactic structures are used in the two samples. In the following sections we shall consider both these questions separately.

Syntactic Complexity

Syntactic complexity is a complex problem when dealing with actual speech samples. One danger is to confuse actual linguistic complexity with psychological complexity. The relationship between syntactic complexity in its pure linguistic sense and the psychological complexity of a sentence is not clear at this time (cf. Brown, et al., 1968). Throughout the following section it should be remembered that we are speaking of linguistic complexity; no claims are being made about psychological complexity.

Even in its pure linguistic sense the notion of syntactic complexity is not precisely definable, since there is no clearly operationalized method of measuring how complex a given sentence is. One method which has been used to some extent, and the one guiding the present analysis, is to count all the transformational rules needed to account for a given surface structure. However, when approaching a real sample of speech, it becomes immediately apparent that such a count is not a straightforward enterprise. First, one must have available a complete transformational grammar for the language from which the speech sample was taken, such as the particular American Negro dialect of English used by the mother being studied here. Unfortunately there is no such complete grammar available for any language. Second, such a transformational count would ~~still~~ be possible in a more limited sense using an incomplete model if in actual speech people used idealized sentences like those studied by the linguist. Indeed, most of the sentences in the A-C sample were such idealized sentences (see Table I[b]), but those in the A-A sample tended frequently to be much less than ideal in structure. For instance, there are many sentences in which the second half seems derived from a base structure completely different from the base structure of the first part (see, for instance, item 67 in Table 1[a]). Indeed, the syntactic analysis of the A-A sample was extremely difficult. For this reason, all the results presented below are only highly tentative.

In spite of these difficulties, developing some measure of syntactic complexity still seemed worthwhile. Since I could not count every transformational rule in the derivational marker of each sentence, I decided to construct a list of major syntactic structures, most of which are handled transformationally and thus produce non-kernel sentences in the sense of Chomsky (1957). Since the list included most of the major types of transformations used in English, the number of them used in a given sentence was taken as a measure of syntactic complexity. Thus, the list became a sort of yard-stick of syntactic complexity, though possibly a somewhat inaccurate yard-stick.

Method: A list of syntactic structures ("transformations") was drawn up, the use of any one of which, with the exception of most adverbial structures, would result in non-kernel sentences. These "transformations" consisted of the following:

A. Elaborations of the verbal structure.
   1. Imperatives.
   2. Passives.
   3. Negatives.

   No attempt was made to analyse the auxiliary structure of the VP. Only these gross transformations of the verbal structure were counted.

B. Interrogatives.
   1. Yes-No questions marked by rising terminal intonation only.
   2. Yes-No questions with auxiliary or copular inversion.
   3. Questions marked with such tags as "huh?", etc.
   4. Truncated tag questions ("That's nice, isn't it?").

C. Structures resulting, according to transformational theory, from combining two different sentences.
   1. Adjectives in pre-noun environment.
   2. Possessives in pre-noun environment.

3. Nominal conjunction ("He and she went", "I saw him and her").
4. Verbal conjunction ("We ate and slept").
5. Subordinate clauses.

Chomsky (1965) subcategorizes what I have called subordinate clauses into the following constructions.

I. Nested constructions.
   A. Self-embedding.
   B. Not self-embedding.

II. Branching constructions.
   A. Right-branching.
   B. Left-branching.
   C. Multiple branching.

It may have been well to distinguish among these various sorts of sentence subordinization, but I have not done so at this time. An instance of any such constructions is simply counted as a subordinate clause.

D. Deletions.
1. Truncations. ("I do" for "I do love you.")
2. Deletion of auxiliary "do".
3. Deletion of copula.
4. Deletion of pronoun.

Items 2, 3, and 4 here might be considered as phenomena specific to this particular dialect of English, though they do occur with considerable frequency in other dialects.

E. Adverbial expressions.
In transformational theory, adverbial expressions of time, place and manner are not usually dealt with transformationally. However, I have counted them, too, since they were characteristically quite frequent in the A-A sample while relatively rare in the A-C sample.

Each of the first 107 fully developed sentences in each sample was analyzed separately counting how many of the "transformations" listed above are needed to derive the given surface structure. This number was then used as a measure, tentative as it is, of the syntactic complexity of that sentence. I am not totally confident that even this limited measure is accurate, since many marginal phenomena were observed in the A-A sample. However, I feel strongly that refinement of the measure, which I plan to do in the near future, would yield basically the same results.

Results: The results on syntactic complexity are summarized in Figure 2 and Table V. Figure 2 shows that the frequency distributions for syntactic complexity are radically different for the two samples. Once again, as was the case for the measure of length of sentence, syntactic complexity was more variable in the A-A sample than in the A-C sample. This difference is quite marked, as indicated by the non-overlapping 99% confidence intervals (see Table V). Furthermore, the two samples differed in average complexity. There were nearly twice as many transformas utilized in the sentences in the A-A sample than in the A-C sample. Using the same argument presented above for testing the difference in mean number of morphemes per sentence using the t-test, a t-test was applied to these data, too. The result was, once again,

a highly significant t-value ($t=5.049$; $df=212$; $p<.001$). Thus it can be concluded that the mother under study produced, on the average, syntactically more complex sentences when speaking with the two adults than when speaking to her child. In addition, her speech was more variable in complexity when speaking to the adults than when speaking to her child.

Frequency of Specific Syntactic Structures.

Now we can turn to the second question concerning syntactic structure, namely, how often are specific syntactic structures used in the two samples?

Method: With only one exception, the same list of "transformations" was used in this analysis as in the measure of syntactic complexity. The exception was adverbial expressions. They were not counted here. The analysis was based on the first 111 fully developed sentences in each sample. It should be remembered that the structures counted are not necessarily mutually exclusive. Although it is not possible for one sentence to be recorded both as a yes-no question and as a wh-question, it is not at all unlikely that, for instance, a wh-question is negative. Such a sentence, then, as

"Why didn't you come?"

would be recorded as a wh-question and as a negative.

Results: The results from this frequency count are shown in Table VI. Although no statistical analysis has been applied to these data, it is clear that many of the syntactic structures counted were used with different frequencies in the two samples. For instance, there were 34 imperatives found in the 111 A-C sentences, while only two were found in the 111 A-A sentences. Negatives were quite frequent in the A-A sample, but relatively rare in the A-C sample. One particularly striking difference was the overall number of questions. In the A-A sample there was only one clear-cut question, while there was a total of 57 questions in the A-C sample, i.e., approximately half of the sentences addressed to the child were questions. The most radical difference seems to lie in the number of subordinate clauses. In the A-A sample there were 90 such constructions, while there were only 9 in the A-C sample. The other differences are not so great in magnitude, but several of them are probably significant differences.

It should be noted that most of the auxiliary "do", copular, and pronomial deletions occurred in inverted yes-no questions. It might at first seem strange to state that questions such as

"Wanna sing me a song?"

and

"You here?"

are inverted yes-no questions with pronomial and auxiliary "do" deletion in the former and copular deletion in the latter. However, there is sufficient linguistic evidence supporting this analysis. For instance, the first sentence would probably be followed by

"You wanna sing me a song?"

or

"Do you wanna sing me a song?"

and the second question by

"Are you here?"

There were many such expanded repetitions found in the A-C speech sample, and in most cases the repetition showed that the original truncated sentence was an inverted yes-no question with the auxiliary or copula and frequently also the pronomial subject deleted. Thus, the presence of so many such deletions in the A-C sample is highly correlated with the number of yes-no questions with inversion counted in the same sample. The absence of such deletions in the A-A sample reflects only the absence of such questions there.

Discussion

The results from this pilot study are certainly suggestive of a marked contrast between adult speech to children who are learning to speak and adult speech to other adults. Indeed, on none of the measures taken were the two speech samples the same. The sentences in the A-A sample were on the average much longer than those in the A-C sample, they were spoken more quickly, showed greater lexical variability, and greater syntactic complexity. In addition, the use of specific syntactic structures differed radically in the two samples. Some constructions which the mother frequently used when speaking with the adults were rarely used when speaking with the child, and vice versa. Finally, there was greater variability in both length of utterance and in syntactic complexity found in the A-A sample than in the A-C sample.

Although these differences are striking, they cannot be taken as proof that adults speak differently to children who are learning to speak than they do to other adults. The study must be expanded to include more families. If similar differences are observed in a larger sampling of adults, then it will be possible to conclude that the input structure to the child learning to speak is a specialized style of language. It is our intention to expand this study in the near future in order to test this. The present results, though, are encouraging and provide strong stimulus for a larger study.

The study which we plan to do will also include as an important variable the level of linguistic development of the child in question. Assuming that similar differences as those just reported are found in other adults with children at approximately the same stage of linguistic development, it would be interesting to study adult speech to children at different stages of linguistic development to see whether this adult-child speech style changes as the child develops. We are hoping to include families with children who have not yet started to form sentences and families with children who are quite advanced linguistically, say, five years old or more.

Finally, it would be interesting to establish whether such systematic differences are a culture specific phenomenon, depending, for instance, on the degree of formal education of the parents, socio-economic background, eventually even language community. It would indeed be of considerable psycholinguistic interest to discover, for instance, that all adults, irrespective of socio-economic or cultural background, make such adjustments in their speech when speaking with children. Such a finding would motivate a hard second look at the role of adult language in the child's language acquisition process. It would suggest, for instance, that the adult input to the child serves as more than a "passive" model out of which the child in some mysterious manner derives the "local transformational rules" needed to map his base structure into the surface structure of the language being learned. It might even be that adults

quite systematically adjust their speech in such a way as to highlight the important syntactic, lexical, and possibly prosodic features which the child at a given stage of acquisition needs to learn. The adult's speech to the child might be a sort of "programmed text" for language learning, possibly becoming ever more complex as the child develops his linguistic skills. However, all this is for the present sheer speculation. Hard data are needed.

It does seem necessary to re-evaluate the particular measures used in order to decide whether or not they are reliable. In particular, since measures such as the morpheme count and the syntactic counts rely heavily on the researcher's linguistic intuition, we should provide some test of reliability. This can be done simply by having more than one judge analyze the data. In addition, we hope to strengthen the measure of syntactic complexity and more finely differentiate the various syntactic structures in the frequency count. It could be argued that a strictly behavioral measure of complexity should be used. For instance, one might have naive English speaking subjects rate sentences on degree of complexity. Such a technique would have the advantage of not relying on a specific linguistic notion of complexity which, as already said, has no clearly defined relationship to psychological complexity of a sentence. However, since the measure used in this pilot study, rough as it was, was able to discriminate such radical differences between the two speech samples studied, continued use of this measure seems appropriate as long as we are asking such a general question as whether or not the two samples of speech differ in terms of syntactic complexity in general. At a future date we might want to ask the intrinsically more interesting question, namely, what significance does this difference in sentential complexity have in the child's process of language acquisition? At that time some type of psychological measure of complexity would be necessary. But first we must establish that syntactic simplification is characteristic of adult speech to children in general.

In closing it should also be mentioned that we plan to compare the adult-child and adult-adult speech samples on whether or not they differ intonationally. More specifically we will take measures of average fundamental frequency and range in fundamental frequency. In the pilot work presented in this paper no systematic study was made of intonational differences between the A-A and A-C samples. However, it was our impression that the two samples differed very much in intonation. The mother's voice in the A-C sample seemed in general to be considerably higher and more variable in pitch than in the A-A sample. Actual instrumental measures of pitch would thus provide some interesting information.

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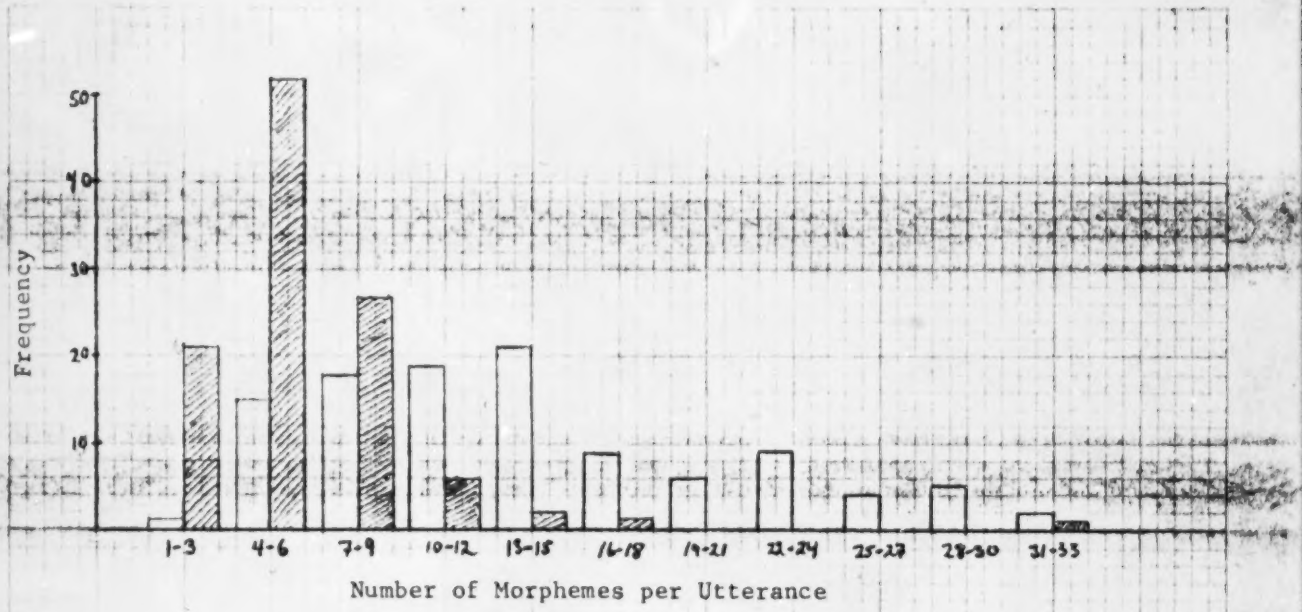


Figure 1: Frequency Distributions of Number of Morphemes per Utterance. White indicates A-A sample. Shaded indicates A-C sample. N equals 111 for both samples.

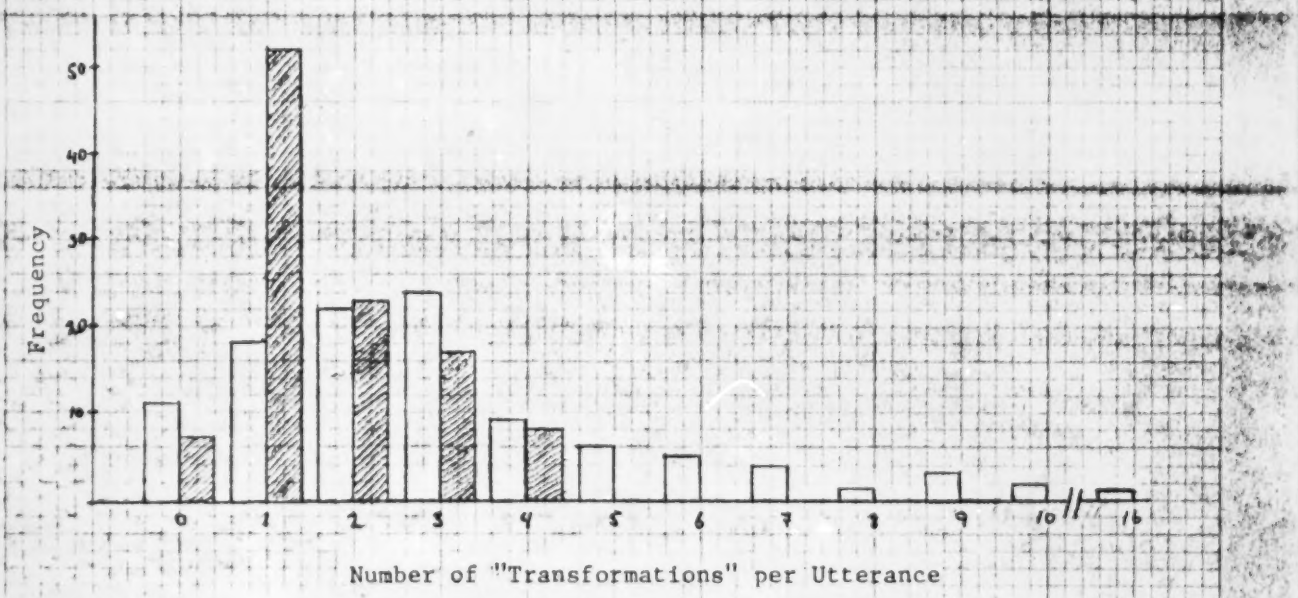


Figure 2: Frequency Distributions of Number of "Transformations" per Utterance. White indicates A-A sample. Shaded indicates A-C sample. N equals 107 for both samples.

Table I(a): Sample of Adult-Adult Speech

17. An' then well now his father an' I are separated, so he sees me mainly.

18. An' then I try to do things with him and for him an' all to, kinda make up y'know for this.

19. But I can't, y'know, 'cause I can't put no man there to be a symbol for him or nothing.

20. He wouldn't have nothin' to do with Georgia.

21. An' then that child has so many problems that are jus' his or hers alone, y'know.

---

51. No, I really--I really believe that--that church an' the Bible an' all, that's good.

52. It gives me a certain amount of consolation which allows me to relax my mind and start thinking intelligently an' putting my efforts all in one y'know force goin' in one direction rather than jus' y'know continually feeling sorry for yourself.

53. It takes a little time.

54. 'Cause tha's bad.

55. 'N' you can't name the sort of virus goin' y'know.

---

65. I was on a inhalation series routine.

66. We wen' aroun' from ward to ward.

67. People are--y'know, that get all this mucus in their chest.

68. An' it's very important to breathe properly an' to be able to cough this mucus up and out an' through your chest, y'know as soon as possible.

69. And we couldn't sterilize the instruments, 'cause they were plastic.

Table I(b): Sample of Adult-Child Speech

1. Come play a game wit' me.
2. Come play a game with me.
3. Wanna play a game with me?
4. You wanna play a game with me savoir faire?
5. Come look at Mamma's colorin' book.
6. You wanna see my coloring book?
7. Look at my coloring book.
8. Lookit, that's an Indian, huh?
9. Is that an Indian?
10. Can you say Indian?
11. Talk to me.
12. Watcha been doin' today?
13. What did you do today?
14. Look at that.
15. That's a funny picture, huh?
16. Oh...wheee....Look!
17. What's that?
18. What's that?
19. And that's a church, huh?
20. Yeah, Marcus goes to church.
21. Marcus goes to church?
22. See.

Table II: Length of Utterance in Terms of Number of Morphemes/Sentence

	N*	M	s	s^2	99% conf. int. $\hat{s}^2$
1. Adult-Adult	111	14.58	8.58	73.69	$(54.16 \leq \sigma^2 \leq 109.56)$
2. Adult-Child	111	6.04	3.62	13.09	$(9.62 \leq \sigma^2 \leq 19.46)$

*First 111 fully developed, syntactically sufficient sentences.

Table III: Rate of Speech in terms of Number of Syllables/Second

	N*	M	s	s^2	99% conf. int. $\hat{s}^2$
1. Adult-Adult	35	5.22	1.21	1.47	$(.89 \leq \sigma^2 \leq 3.28)$
2. Adult-Child	35	4.66	1.00	1.01	$(.62 \leq \sigma^2 \leq 2.27)$

*35 randomly selected, fully developed sentences.

Table IV: Lexical Variability in Terms of Type-Token Ratio

	N*	Type-Token Ratio
1. Adult-Adult	1000	.282
2. Adult-Child	1000	.207

*First 1000 words of running text. Sentence fragments and one word utterances are included.

Table V: Syntactic Complexity in Terms of Number of "Transformations"/Sentence

	N*	M	s	s^2	99% conf. int. $\hat{s}^2$
1. Adult-Adult	107	3.08	2.66	6.92	$(5.06 \leq \sigma^2 \leq 10.38)$
2. Adult-Child	107	1.69	1.05	1.11	$(.81 \leq \sigma^2 \leq 1.66)$

*First 107 fully developed, syntactically sufficient sentences.

Table VI: Frequency of Occurrence of Specific Syntactic Structures*

Syntactic Structures	Frequency A-A	A-C
A. Verbal Structures		
1. Imperatives	2	34
2. Negatives	38	7
3. Passives	2	0
B. Interrogatives		
1. Yes-No: Intonation only	0	3
2. Yes-No: Inversion	0	30
3. Tags ("huh?", etc.)	0	11
4. Truncated Tags	1	3
5. Wh-questions	0	10
C. General		
1. Adjective /__N	8	22
2. Possessives/__N	21	15
3. Nominal Conjunction	20	1
4. Verbal Conjunction	5	0
5. Subordinate Clauses	90	9
D. Deletions		
1. Truncations	2	2
2. Deletion of "do"	0	12
3. Deletion of Copula	0	5
4. Deletion of pronoun	0	2

*Based on first 111 fully developed utterances from each sample.

Repetitions in a Mother's Speech

to her Child

Ben Kobashigawa

for Dr. Susan Erwin-Tripp
Speech 156

8/26/68

This study deals descriptively with some of the linguistic properties of a mother's use of repetition in talking to her 26 month old son and also with some, perhaps interesting, perhaps incidental phenomena associated with her use of repetition.

Nearly a quarter of the mother's speech in this sample is repetition. Most of the instances of repetition involve various alterations of their originals. The alterations which occur include changes in word order; addition, deletion, or substitution of words; changes in intonation; morphophonemic alterations; and morphological changes. Many, nearly half, of these changes alter the surface structure relations of the original utterances.

Repetitions tend to retain the original sentence, or syntactic, type. In 19 of the 88 cases, however, there are switches in sentence type with, for instance, imperatives re-expressed as questions, or questions as declaratives, etc.

Where the notion of repetition is broadened to include entire sequences of utterances each of which deals with a single topic or theme, some patterns describable in linguistic terms appear, which may indicate the processes underlying the production of those sequences of utterances. These are presented in the last section of the paper.

Materials:

The tapes used in this study were obtained from Claudia Mitchell. They are recordings of a black mother in Oakland talking to her 26 month old son, Mark. The sections of the tape in which the mother is testing her son from material given to her by Claudia Mitchell were discarded and only the free speech used. The tapes were transcribed in English orthography and only the very common morphophonemic alternants, such as going' versus going, were marked in any way. Intonation of the syntactically differentiating sort was transcribed with conventional punctuation marks. Any other special transcriptional devices are used only in the examples in this paper and are explained where used.

Criteria for Repetition:

Describing what occurs in repetition is in a sense an explication of what is meant by the word repetition. The criteria for what is or is not repetition were certainly not made explicit a priori, but some restrictions

or criteria did appear in the process of making judgements on individual cases and these will now be discussed. Those which seem intuitively clearly justified will be presented first and then some others which may seem more arbitrary.

An instance of repetition must occur reasonably soon after the original utterance--and "soon" means that there are no prolonged pauses with intervening activity. Only certain kinds of utterances may intervene between the original utterance and its repetition and these are of the attention getting sort such as Huh?, Mark!, Talk to me., etc. There are two cases where this restriction had to be relaxed. They both entailed the alteration of two repeated utterances:

Tell me what your name is.
Say "Mark Thompson".
Oh. Ow!
Hey. Don't do that.
R: Tell me what your name is.
R: Say "Mark Thompson".

The repetition must be semantically and pragmatically close to the original utterance. Hence, for example, in:

Look it. That's an Indian, huh?
Is that an Indian?
Can you say "Indian"?

the last is not counted as a repetition of the immediately prior utterance. The two utterances require different responses whereas the first and second utterance may be viewed as requiring the same response.

It would be hard to make fully explicit criteria of semantic similarity, but since I was primarily interested in the structural properties of repetition, the following cases were treated as repetitions:

Oh wasn't that a boy?
A bad boy like Mark?

and:

Are you a good boy?
Sometime you a good boy?

There is semantic change but also too much overlap both semantically and syntactically to ignore.

The utterances which are counted as repetitions are treated as repeti-

tions of the most immediately prior utterance which qualifies on semantic and pragmatic grounds. Hence, in a sequence of repetitions, each utterance is treated as a repetition of the one just before it and the differences determined on that basis. The exception to this practice is due to intervening instances of elicitation. In general, elicitation is never treated as a repetition of prior non-elicitation utterances. So, for example, in:

An' you gotta Popeye ring today, didn't you?
You gotta Popeye ring?
Can you say "Popeye"?
"Popeye."
You gotta Popeye ring from the doctor, huh?

the last utterance is regarded as a repetition of the second. Elicitation forms are treated as a class by themselves and may have their own repetition--as occurs in the above example.

Finally, non-syntactic utterances of the sort Huh?, yes, Mark, Oh--Whee--look, and others which are not part of a sentence are disregarded in this study. There can be and is repetition even among these forms, but individual cases are often very ambiguous.

Repetition:

The first thing to find out is how extensive repetition is in the speech of this mother. A simple breakdown of the transcript into utterances which are repetitions, the originals of repetitions, non-repeated utterances, elicitation forms and non-syntactic types shows that utterances involved in repetition (original + repetition) constitute a large portion of the mother's speech. Repetitions constitute .34 of all utterances, .47 of the syntactic

Table 1

Frequency of repetition

Original Utterance:	55
Repetition:	79
Non-repeated Utterance:	102
Elicitation:	51
Non-syntactic:	104
Total:	391

utterances and .57 of the non-elicitation, syntactic utterances which are the kind we are, here, primarily interested in.

Exact repetitions were taken as an ideal form of repetition and differences from the ideal tabulated to determine how strict or free repetition is and in what directions. Differences which were considered noteworthy were first, changes in word order which obviously entails changes in the surface structure of the original. The second category of difference is word substitution which is subcategorized into that which represents an alteration of the surface structure and that which does not; for instance, to change come look to wanna look alters the relation of the verb look with its preceding verb--from conjunctive to dependent; on the other hand, to substitute Mommy for me in Sing me a song. entails no structural change in the surface structure. The third category is intonational change which again may be structural or non-structural; that is, the change to a question intonation contour from an original declarative is a structural change while contranstive stress or a raising of the pitch level with no significant change in the intonation contour is not. The fourth category is word deletion with markings for the number of words deleted. The fifth category is word addition in which there are three subcategories: filling in deleted morphs as in do-deletion in the original or imperatives; a central, structural change where a clause in the original is altered in its internal surface structure relations as in, for instance, the expansion of the noun phrase; lastly, there are peripheral structural changes in which words or phrases are conjoined to the original as in the case of appended vocatives, sentential adverbs, or degenerate imperatives such as lookit or comeon. The sixth change is a morphological change such as past to present in the verb phrase. The seventh and last is morphophonemic alteration such as between wit'and with. Table 2 presents these changes for non-elicitation utterances with the number of the utterance in the transcript indicated. Since any given instance of repetition may have more than one change from its original, the same utterance is sometimes found in more than one column. The fact that in Y/N Questions intonation and subject--auxiliary verb inversion occur together is ignored in this tabulation. Table 3 presents the same tabulation for elicitation forms. In both of these tables there is one category of change which has been ignored; this is where the relative pitch level of the entire utterance has been raised or lowered relative to the original. If this is the only change in the repetition form then it

Table 2

Instances of repetition
classed by differences
from original utterances

Exact R.	Word Order	Word Subst. Str.	Word Subst. N-Str.	Intonation Str.	Intonation N-Str.	Word Delet.	Word Addition Con.	Word Addition Peri.	Word Addition Ø
52T	13	3	8	3	26	9	45'''	5	5
55T	49	8	9	8	53	13	53''	49''''	8
59	83	51''	13	9	63S	18	83	51	47
89	290	112	47	31	134S	31	104	92	49''
99⊥	326	165''	49	58	217	48''	129''	134	137
102⊥	327	210	112'	83	245	53	159	159	268
121T	340	228'''	125	112	277T	63'''	167	195	304
141T		286'''	126	137	321⊥	65'''	195'''	202	336
213		290	159	159	336	78''''	202''	205	352
256		321	202	192	399T	104	207	207	
306T			217	195		192'''	272''	310	
317			268	202		202	286'''	324	
342			313	205		205'''	327	332	
377			315	228		206''			
			324	257		257''			
			327	277		258''			
			332	286		261''			
						272''''			
						277'''			
						290			
						327''''			
						340'''			
						349			
						374			
						399			

T = raised pitch level

⊥ = lowered pitch level

S = shift of main stress

NB. each number represents the utterance from the transcript being counted here.

Table 2
(cont'd)

Morphol Alternat.	Morpho-phonemic
18	2
167	8
	18
	112
	159
	349

Table 3
Repetition among elicitation forms

Exact R.	Word Order	Word Subst. Str.	N-Str.	Intonation Str.	N-Str.	Word Delet.	Word Addition Cen.	Peri.	∅
44				*194↓	*384	35	*274	*368	
90↓				*356	*365↓	94↓	357		
115↓					*381↓	*116			
248						358↓			
367↓						365↓			
390						*381↓			
391									
392									
393									
395									

* = elicited form affected

Table 4

Summary of changes in repetition

	Non-Elict.	Elicit.	Total
Exact Repetition:	14	10	24
Word Order Change:	7	--	7
Word Subst. Str.:	10	--	10
Non-Str.:	17	--	17
Intonation Str.:	17	2	19
Non-Str.:	10	3	13
Word Deletion :	25	6	31
Word Addit. Cen.:	13	2	15
Peri.:	13	1	14
∅ :	9	--	-
Morphophonemic :	6	--	6
Morphological :	2	--	2
Total :	143	24	167

Table 5

Frequency of exact and altered repetitions

	Non-Elict.	Elict.	Total
Exact Repetition:	14	10	24
Altered Repetition:	65	12	77
Total:	79	22	101

was counted as exact repetition with the pitch change indicated; if other changes also occur, then the change in pitch level was counted under non-structural intonation change. The reason for doing this was to not obscure the fact that in some cases all syntactic relations within the repetition were the same as in the original and therefore, syntactically, these represent cases of almost exact repetition.

It is evident from inspection of these two tables that there is relatively little exact repetition. Table 4 and 5 show this more clearly. The former presents in numerical form the frequency of the changes under the various categories and the latter table shows the number of utterances which are exact as against altered repetitions.

The fact that repetitions are usually not exact indicates that these utterances are not reproductions from memory but are regenerations. This is not surprising of course but what about exact repetitions? are they accidental? I saw no regularities and didn't pursue the question.

One interesting fact about repetition is that they aren't necessarily tied to an urgent need to communicate, get information or get the child to do something. Repetition sometimes occurs where it seems unreasonable to expect the child to understand what was said in the first place. In fact, the second example presented here it is quite clear that the mother must be aware that the child can't understand her:

(child)...
Shoe shine at the shoe shop (mother expands the child's utterance)
Indians don't know nothin' about no shoe shop.
R: No, Indians don't know nothin' about no shoe shop.

You really short of breath all the time like that?
Mmhmn.
You got emphysema or somethin'?
R: You have?

Related to this is the fact the repetitions do not tend to be simpler than the originals, at least the fact that deletions and elaborations don't differ in frequency indicates this (Table 4).

Predictability of change in repetition:

The question of whether the changes which occur in repetition are pre-

dictable or not can be examined at several linguistic levels. Only one was undertaken here. Table 6 is a matrix of original utterances and their repetitions with syntactic types of utterances used as the categories in the rows and columns. Again elicitation and non-elicitation forms are treated separately. Table 7 summarizes the data under the categories of Statement, Question and Imperative. It is clear in all these tables that syntactic type tends to remain constant.

Table 6

Relation of repetition and original in syntactic type

	Dec	Imp	Y/N Q	Tag Q	Wh-Q	Int.Q	
Decl.	6	-	-	1	-	1	
Imp.	-	20	3	-	-	-	
Y/N Q	2	2	19	1	-	-	Non-elicitation
Tag Q	-	-	3	2	-	-	forms
Wh-Q	-	2	1	-	6	-	
Int.Q	1	-	-	-	-	1	

	E.Imp	E. Y/N Q	E."___" only	
E.Imp.	14	1	1	
E.Y/NQ	-	1	6	Elicitation
E"___"	1	-	1	forms

Table 7

Summary of table 6: Non-Elict. Forms

	Statement	Question	Imperative	Total
Statement	6	5	0	11
Question	3	33	4	41
Imperative	0	3	20	23
Total	9	41	24	75

APPENDIX

Some examples of repetition:

Exact Pepetition:		You love your Mommy? You love your Mommy?
		Sing me a song. Sing me a song.
Syntactic Alteration:	Imper.	Come play a game with me.
	Question	Wanna play a game with me.
	Q-Tag	Look it. That's an Indian, huh?
	Y/N Q	Is that an Indian?
	What Q	What's your name?
	Imp.	Tell me what your name is.
Word Order		Do you ever get ready to go to bed? You do?
		What's your name? Tell me what your name is.
Word Substitution		Sing me a song. Sing Momma a song. Sing me a song.
		You like to bathe yourself? You like to take baths? You like to take a bath?
Intonational Change		What's that? What's that?
Morphophonemic Alternation:		Come play a game wit' me. Come play a game with me.
Reductions		Can you say "rooster"? "Rooster"?
		That's a funny book, huh? funny book?
		An' you gotta Popeye ring today, didn't you? you gotta Popeye ring?

Oh lookit, that's a funny lookin'
thing there, huh?
That's funny lookin', huh?

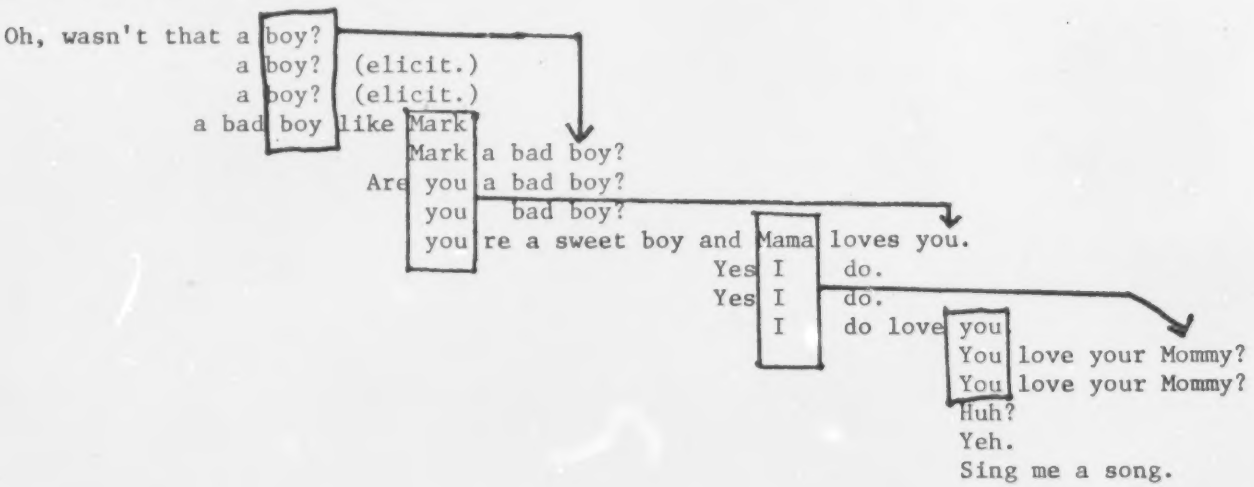
Elaborations

That was nice
That was very very nice.

wanna play a game with me?
You wanna play a game with me, savoir faire?

PATTERNS INLONGER SEQUENCES

A Permutation pattern

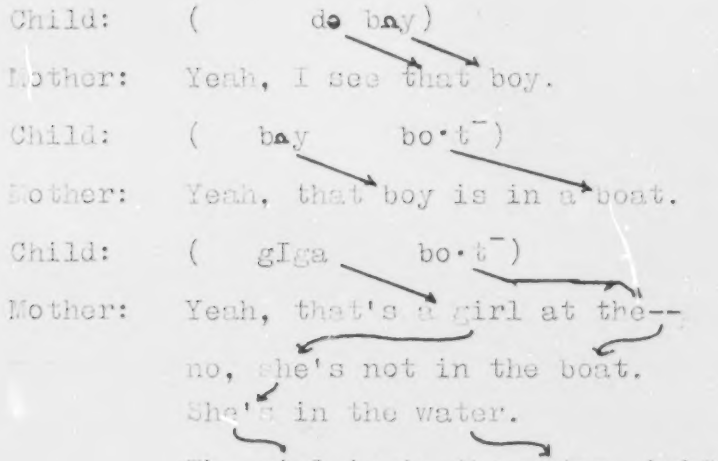


...end sequence

Sequence Marking

I.	Begin	Come on. Let's say your ABC's, okay?
		Say "A, "B,..., "Z".
		Oh, that's a good guy
	End	Yeah
	Begin	Now you wanna count?
		You know how t' count?
		I bet you don't.
		Say "One", "Two", ..., "Ten".
	End	Yeah
	Begin	Now tell me what your name is.
		D' you have a name?
		Tell me what your name is.
		Say "Mark"..."Thompson".
		You can say it better than that. Say "Mark"
		Say "Mark"..."Thompson"
	(end)	
	(Begin)	
		How old are you, Mark?
		Two?
		Two. That's a good guy, huh?
	End	Yeah.
	(Begin)	
		That's a radio.
		A radio?
		Radio
	End	Yeah.
II.		What's that?
		The man gonna eat?
		Yeah, he gonna eat his dinner.
	End	Yeah.
	Begin	And so that's a coffee pot, huh?
		yeah, coffee pot. (imitation.)
		coffee? (elicit.)
		yeah, coffee pot.
	End	yeah.
	(Begin)	
		You like coffee?
		You do?
		How you like your coffee?
		Mm?
		How you like your coffee?
		Huh?

Some Expansions:


Child: (də bɑy)
Mother: Yeah, I see that boy.
Child: (bɑy bo·t¯)
Mother: Yeah, that boy is in a boat.
Child: (gIga bo·t¯)
Mother: Yeah, that's a girl at the--
no, she's not in the boat.
She's in the water.
The girl is in the water, huh?

Stress and Repetition:

1 1 3 1 0 0 0
An' you gotta ˈPopeye ring today, didn't you?
0 0 2 0
you gotta ˈPopeye ring?
1
Can you say ˈ"Popeye"?
0
"Popeye". ˈ= main stress

1 1
See. That's like they have on ˈDaktari.
1 2
You know ˈJudy that old chimpanzee on Daktari?
1
You like ˈJudy?

Yeah, ˈJudy is your ˈfriend, huh?

Yeah.

Elicitation and intonation imitation by the child.

There are several instances of the following in which the mother elicits a form with a question. The form being elicited has a question intonation which the child tends to imitate with the form. The mother responds to this by repeating the elicited form with the intonation changed: